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SOLRAD-11 ON-LINE SYSTEM (SOLOLS), APPLICATIONS SOFTWARE...INTE--ETC(U)
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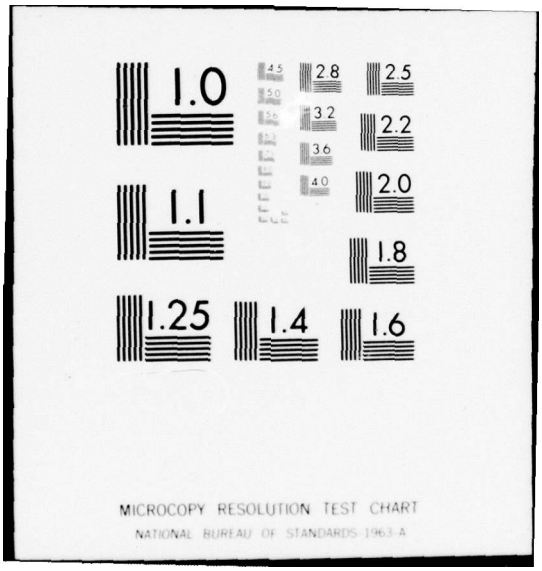
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MICROCOPY RESOLUTION TEST CHART
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12

NRL Memorandum Report 3466

SOLRAD-11 On-Line System (SOLOLS) Applications Software . . . Interim System

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Space Systems Division

March 1977

NAVAL RESEARCH LABORATORY
Washington, D.C.

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE	READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER: NRL Memorandum Report 3466	2. GOVT ACCESSION NO. / 3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle): SOLRAD-11 ON-LINE SYSTEM (SOLOLS), APPLICATIONS SOFTWARE . . . INTERIM SYSTEM	5. TYPE OF REPORT & PERIOD COVERED: Interim report on a continuing NRL problem.
	6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s): Leonard S. Wagner and Donald R. Uffelman	8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS: Naval Research Laboratory, Washington, D.C. 20375	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS: NRL Problem A01-20A
11. CONTROLLING OFFICE NAME AND ADDRESS: NRL-MR-3466	12. REPORT DATE: March 1977
	13. NUMBER OF PAGES: 117
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office): 117p.	15. SECURITY CLASS. (of this report): UNCLASSIFIED
	15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

SOLRAD	Experiment data base	Software overlay
Solar radiation	Experiment status monitor	
Data processing	Data monitor	
Real-time	Data displays	
On-line system	Multi-tasking	

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

The acrhitecture of the SOLOLS applications software, is briefly discussed. The major tasks and subroutines are described in terms of functional flow diagrams. The overlay structure of the applications software, the organization of the data for status outputs and examples of all of the data displays are contained in Appendices A, B, and C.

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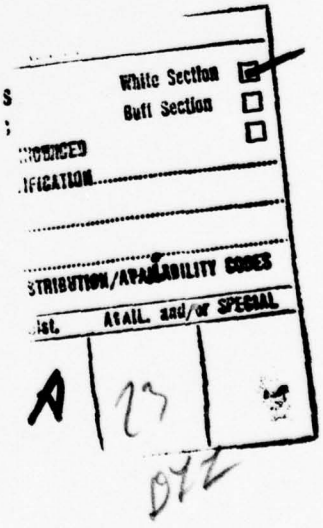


SOLRAD-11 ON-LINE SYSTEM (SOLOLS)
APPLICATIONS SOFTWARE . . . INTERIM SYSTEM

I. INTRODUCTION

The NRL applications software package in the "interim" system is a multi-tasking code embodying a single task overlay and is resident on a Data General NOVA 800 minicomputer. The operating tasks are a data display task, QLOOK; a data base write task, UPDTDB; a communications driver task, NLINK2; and a message processing task, PROCT. All tasks other than QLOOK are continuously core resident during operation. QLOOK, because of its size, must be overlayed with only a small root program continuously core resident.

QLOOK is the main system task in the sense that it prepares the system to receive the other tasks and then activates them. Once a task is activated, access to the CPU is determined by the RDOS (real-time disk operating system) TASK SCHEDULER according to priority. Since the data display task is of lesser urgency than the real-time data base update, QLOOK lowers its priority after activating the other tasks. The RDOS protocol for task ACTIVATE, ABORT, READY and SUSPEND is designed to make most efficient use of the CPU. Providing adequate access to the CPU for each task is largely a design factor for the code designer.

II. DATA DISPLAY TASK (QLOOK)

The data display task is described in the flow diagram shown in figure 1. After activation of the other tasks, the root program embarks upon a loop which initiates software overlays as requested by the operator at the control console. In the event that there are no TTY messages then the task waits for I/O at the "read TTY" point in the code. In a multi-tasking environment, a task awaiting I/O is automatically suspended and the CPU is assigned to other operating tasks. Operator TTY intervention "READIES" the QLOOK task and upon assignment of the CPU, the data output task is executed.

More detailed flow diagrams of the overlayed applications software are given in figures 2 to 5. These flow diagrams are intended to give an accurate sense of the program flow without being accurate in their small details. The major programs and subroutines involved in each of these functions are listed

Note: Manuscript submitted February 17, 1977.

along-side the flow diagrams. Additional details about program operation are available in the code listings which are copiously commented.

The four display programs are as follows: Status Display, Listings Display, Plotter Display and Data Base Describe.

The status display code accepts an experiment number and an observation period and provides a formatted output of experiment status for every page of telemetry data during the prescribed interval. The output device can be either a CRT display console or a line printer.

Similarly the Listings display code provides a formatted output of almost all of the data collected during the prescribed interval.. The data is output, for the most part, in telemetry page modules. There are exceptions,however, for those experiments, such as #9, 16, 17 and 25, in which a complete data record spans many telemetry pages. In such cases a data output module spans a complete experiment record. The output device is again either a CRT display or the line printer.

The Plotter display in its current configuration uses the Calcomp plotter as the output device. The plot software is presently incorporated into the overlay architecture and includes all necessary Calcomp plot subroutines. The actual experiment plot routines are largely undone with the exception of that for experiments #4, 5, 6, 12 and 13. This routine was written to demonstrate feasibility of the overlay structure for the plot routine and also because this group of experiments was of most immediate interest to users. The procedure adopted in the plot routine for experiment #4, 5, 6, 12 and 13 was to plot data in page size increments. A user request for a plot consisting of one hour of data would then involve 30 disk seeks (each page of data equals 2 minutes) and 30 calls to the plot subroutine.

The data describe program is designed to permit examination of the data base to its minutest detail. Data is output in page size increments upon operator request. The data is presented as octal-magnitude and sign for each word or in the actual binary representation. In addition to the data base, the describe program will print the data base directory in an I5 format upon operator request.

The applications software overlay is organized into 3 nodes. A node is a segment of the overlay disk file which is assigned a given area of core. Overlays within the node are shuttled into and out of the assigned core space as directed by the program. Appendix A shows a relocatable loader listing detailing the organization of the overlay file. Node 0 of this file contains

mainly output processing, formatting and print routines. Node 1 contains mainly data retrieval routines and node 2 contains primarily the display executive routines. The loader listing also provides information on subroutine and program sizes as well as overlay savefile core allocation.

The data retrieval routines deposit data relevant to an output request into three arrays the LAR, NAR and MAR arrays. The LAR array contains general information which is useful for header formulation. The NAR array contains experiment status information and the MAR array contains data. The NAR and MAR arrays are specific to a particular experiment. All three arrays are refilled each time a new telemetry page is processed. In cases where several experiments are linked in a single output format, several data seeks are required, each with a different experiment number specification.

Data retrieval is accomplished according to time and experiment number. A minute tag, appropriate to the desired time, is furnished IDBDAT which searches the data base directory for the desired time tag. A tolerance of plus or minus one minute of the time specified is allowed. Each time seek is conducted independently of and in an identical manner to every other seek. If a prescribed time tag is not found in the data base directory, a message to that effect is generated and displayed on the control console. The LAR array is generated in IDBDAT after locating and retrieving the desired page of data.

Each experiment has a specific retrieval routine called RETXX where the X's refer to the experiment number (e.g., RET19 for experiment #19). The data for the NAR array is presented in a programmed format for use by the status display routines. Generally speaking, specific locations in the NAR array are reserved for the same type of information regardless of experiment. The format of the NAR array for all 25 experiments is given in Appendix B. Knowledge of this format is very useful when trying to understand the operation of the Status Display Code.

Most of the data display programs are fairly straight forward and require only a single page of telemetry data for an output module. Certain experiment listings are more complicated, however, and these require some additional description. The most efficient form of exposition is that of the flow diagram and we will make liberal use of this device.

The data for experiment #9 may be distributed over seven telemetry pages depending on the scan mode. The starting page is distinguished by a synchronizing word. In addition, data from experiment #8 is necessary to the proper interpretation of experiment #9 data. As a consequence the code is divided into

three phases. Phase one involves search for the "sync" word. Phase two involves the collection of 7 pages of data starting with the "sync" page. Phase three involves the acquisition of experiment #8 data. Figure 6 is a flow diagram for the experiment #9 LISTING code (EXP9). Figure 7 is a flow diagram for the experiment #9, STATUS Code (STE9) which is also complicated by the distribution of relevant data over seven telemetry pages.

Experiment #15 is less complicated than experiment #9 but is distinguished by the fact that format 3 is almost totally devoted to a read-out of experiment 15 data. In this format, the data is extracted as in other formats except that the program executes 10 data "seeks" in order to extract a complete data record. A flow diagram for the experiment 15 LISTING code is given in figure 8.

Experiment 16 requires eight telemetry pages for a complete data record. It provides for output of stellar, or auroral data or both. A flow diagram for the experiment 16 LISTING code is shown in figure 9.

Each page of telemetry data provides a complete record of experiment 17 data. However, experiment #17 LISTING code allows for output of up to 16 telemetry pages of data on a single output page. In addition, the code permits the selective display of data as shown in the flow diagram of figure 10.

The experiment 25 LISTING code provdes for two types of output, "State of Health" (SOH) data and Gamma data. In order to provide a short history of SOH each page of output contains data from 16 telemetry pages thereby covering 32 minutes of experiment time.

The Gamma data is available in format 2 only and consists of two pages of telemetry for a complete data record. The start of a record is always on the even telemetry page and hence the data extraction is preceded by a search for an even telemetry page number. The flow diagram for the experiment 25 LISTING code is shown in figure 11.

Finally, an exposition of the SOLOLS Applications Software would be incomplete without examples of the available displays. These are given in Appendix C. They include a complete set of STATUS and LISTING displays, a Calcomp graphics display for experiments 4, 5, 6, 12 and 13 and a Data Base Describe (one in octal and one in binary) for a page of the data base.

III. COMMUNICATIONS MULTIPLEXER DRIVER TASK (NLINK2)

In the interim version of the SOLOLS software, NLINK2 is a nonoverlayed task which constantly monitors the communications line for incoming messages. Data is received in byte size

increments. NLINK2 unpacks the data, repacks it two bytes per computer word and sets the flag for the processing task, PROCT, when a message is complete. The driver task involves subroutines MUXR2, BUFGT and UTBYT. NLINK2 and MUXR2 are responsible for the general bookkeeping functions of the task. BUFGT is responsible for the coordination with the multiplexer interrupt service routine and accepts the multiplexer output one word at a time (one data byte/word). UTBYT is responsible for extracting the data byte and reformatting two data bytes to a computer word. Figure 12 is a flow diagram illustrating the operation of the NLINK2 task.

IV. COMMUNICATIONS PROCESSING TASK (PROCT)

PROCT acts as the communications processing task. It is nonoverlayed in the interim version of SOLOLS. It examines the message header (to determine the nature of the message, the source and destination computers and devices) and routes the data accordingly. Appropriate acknowledgement is also generated and relayed to the source computer via the MUXWT subroutine. In the interim version of the SOLOLS system, the NRL computer acts as a destination computer only. For messages destined for the NRL disk, PROCT sets the "message pending" flag for the disk write task, UPDTDB. Figure 13 is a flow diagram for the PROCT task and should be self explanatory.

V. DATA BASE WRITE TASK (UPDTDB)

UPDTDB is a FORTRAN code for writing SOLRAD experiment data to disk on the Data General NOVA 800 mini-computer. Different versions of the code have been written for handling IDB (Interim Data Base) data and ADB (Archival Data Base) data. Since the ADB version is the one which will be retained in the final system, this report will discuss that version.

In the interim version of the SOLOLS applications software, UPDTDB is a separate non-overlayed task. Its function is to create the data base file on disk and to simultaneously create a file directory to facilitate data retrieval.

The data base spans a 30 hour period and is organized as a circular file. Data file records are referenced according to a minute tag stored in a file directory. The minute tags cover a range from 0 to 2879 minutes (48 hours) with an even Julian day corresponding to minute tags 0 to 1439 and an odd Julian day to minute tags 1440 to 2879.

The first four sectors of the data file contain the file directory. Words 1 to 124 are reserved for header and pointer information while words 125 through 1024 are reserved for the minute tag circular file. The next 4500 sectors are reserved

for the data base circular file. Each data record requires five sectors of data thus permitting 900 pages of data spanning 30 hours of observation. Position of the minute tag in the directory file and the position of the associated data in the data file are linearly related.

An ADB record includes a full page of telemetry data and consists of 17 words of header followed by 1024 words of data. The organization of the ADB header is given in figure 14. The organization of the 1024 words of data coincides with that of the telemetry stream. ADB information is received in five (5) installments with 240 words in each of the first four installments followed by 81 words in the final installment. Data is written to disk in groups of 256 words and requires five (5) disk sectors for one page of data. One of the functions of UPDTDB is to provide the interface between the disparate lengths of the received data block (240/81 words) and the disk write data block (256 words).

The file directory header contains information identifying the time period covered by the data base, a pointer indicating the position of the last entry in the directory (IDP), a pointer indicating the last entry in the data base file (IDBP) and a pointer to the earliest minute tag on the reference Julian day (JDTP). These pointers are essential to the proper maintenance of a circular file. The reference Julian day is always the most recent even Julian day where the Julian day is reckoned from January 1, 1976. The organization of the file directory header is shown in figure 15.

The disk write task operates in a multi-tasking environment. The procedure for accomodating the multi-task objective is that UPDTDB checks for a data flag (set by PROCT) when given control by the TASK SCHEDULER. If it finds that its flag has not been set, (implying that a data message is not waiting to be processed) it suspends itself for a programmed interval. After the prescribed interval it is readied again so as to be in a position to accept control when granted by the TASK SCHEDULER. In the event that the data flag is set when UPDTDB has control of the CPU, it performs the functions as outlined in the flow diagram of figure 16.

System constraints dictate that the size of a data message should not exceed 250 words. Of these at most 240 words are data. The remainder consist of communication control words and three words of fill.

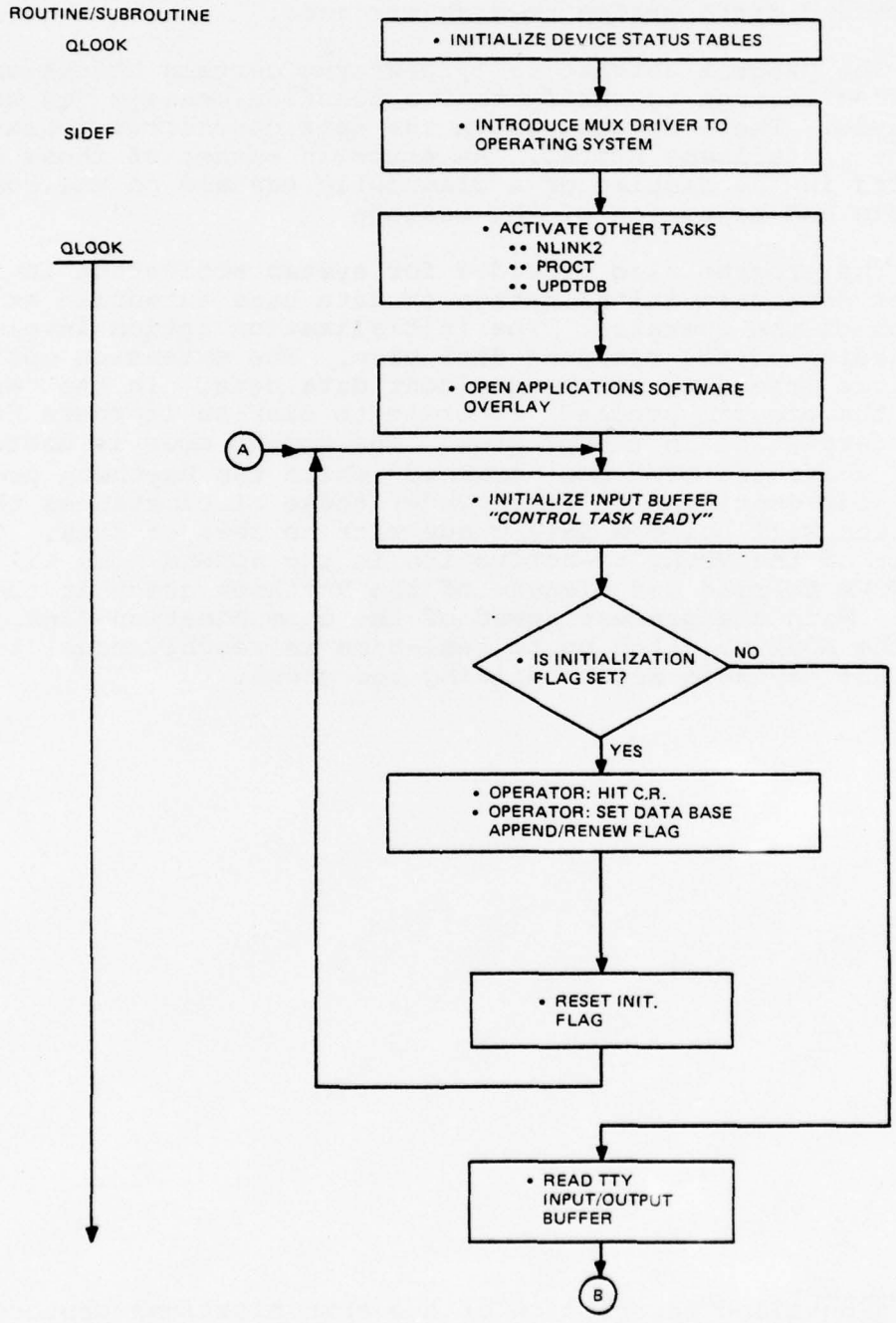
Economical use of core memory demands that data be written to disk in comparable installments rather than queued up in memory until a complete page of data is received. A natural size for a write block is 256 words, the size of a disk sector. The disparity between the size of the receive and write blocks

results in the first write to disk occurring after receipt of the second data installment. The directory is updated at this time as well. Upon receipt of the fifth data installment, the fourth and fifth writes to disk are made.

The program automatically performs certain checks on the received message to verify that a bonafide message has been received. These checks are on the data descriptor index* and on the installment number. An error in either of these quantities results in the display of a diagnostic message on the control console and rejection of the message.

The program also provides for system activation involving either data base initalization or data base extension at the option of the operator. The initialization option involves the discarding of the resident data base. The extension option involves appending to the resident data base. In the "append" mode the program proceeds to write to disk as if there had been no interruption in the program. The append mode is useful in cases where the NOVA has "crashed" while the Raytheon pre-processor continues to run. Under these circumstances the Raytheon will build a data queue with no loss of data. Upon repair of the NOVA, re-activation in the append mode will cause the NOVA to read and dispose of the Raytheon queue at the maximum rate. With the present speed of the communication link, the time for the NOVA to catch up to real-time is roughly equal to the time the Raytheon spent building the queue.

*For a detailed description of the communications protocol refer to the documentation of the communications system.


ROUTINE/SUBROUTINE
QLOOK
SIDEF
QLOOK
• INITIALIZE DEVICE STATUS TABLES
• INTRODUCE MUX DRIVER TO OPERATING SYSTEM
• ACTIVATE OTHER TASKS
•• NLINK2
•• PROCT
•• UPDTDB
• OPEN APPLICATIONS SOFTWARE OVERLAY
A
• INITIALIZE INPUT BUFFER "CONTROL TASK READY"
• IS INITIALIZATION FLAG SET?
NO
YES
• OPERATOR: HIT C.R.
• OPERATOR: SET DATA BASE APPEND/RENEW FLAG
• RESET INIT. FLAG
• READ TTY INPUT/OUTPUT BUFFER
B

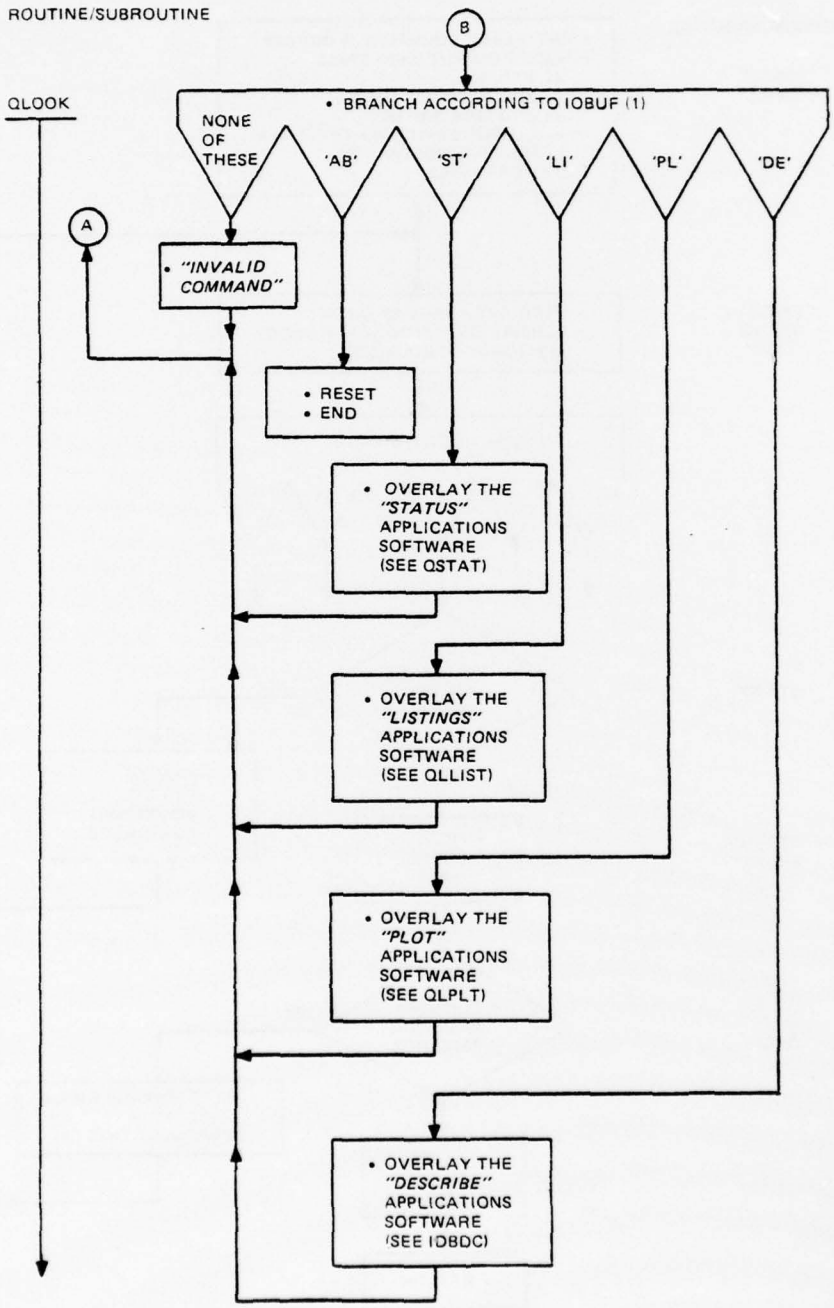


Fig. 1 — Main analysis task (QLOOK)

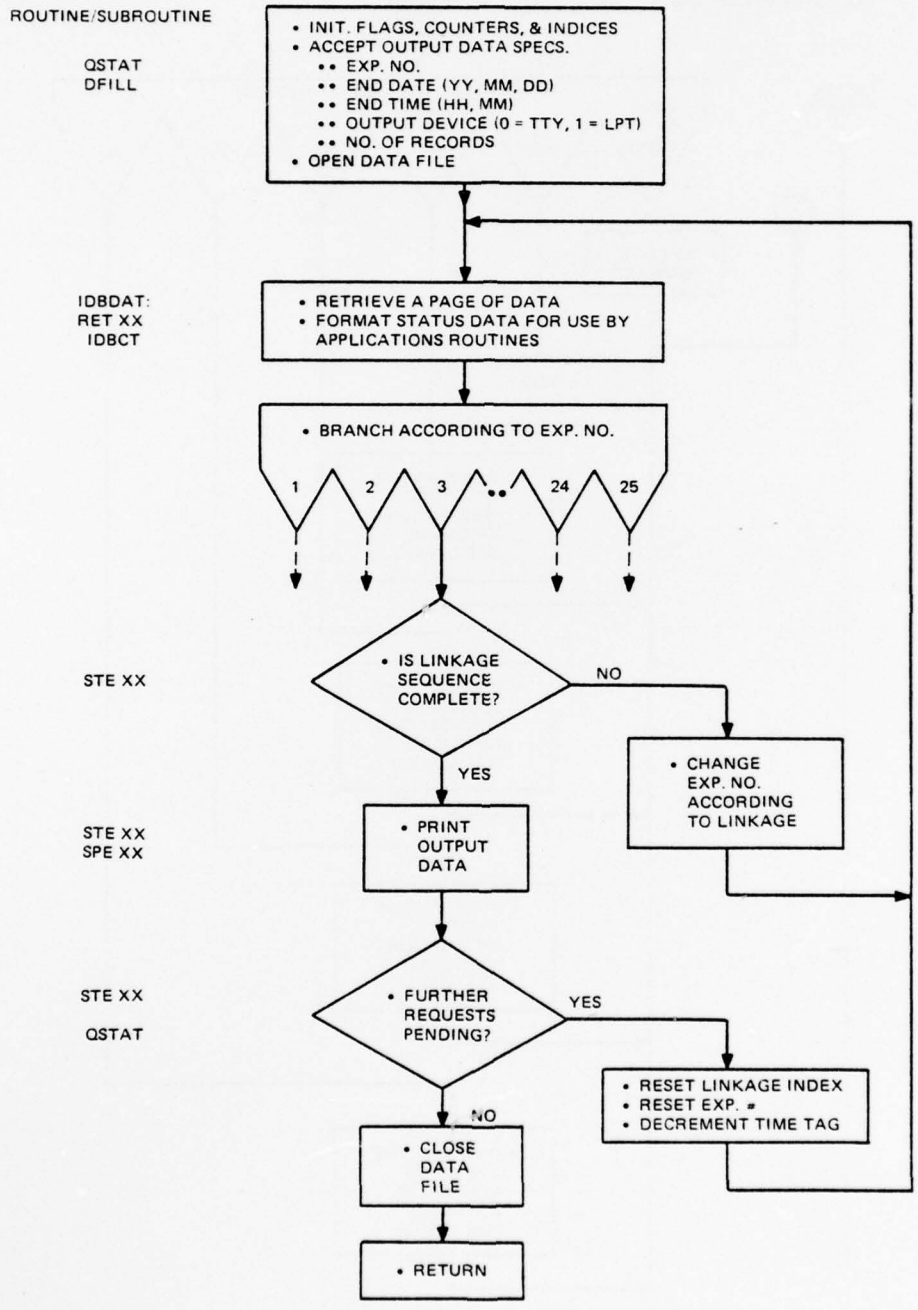


Fig. 2 — Status display executive (QSTAT)

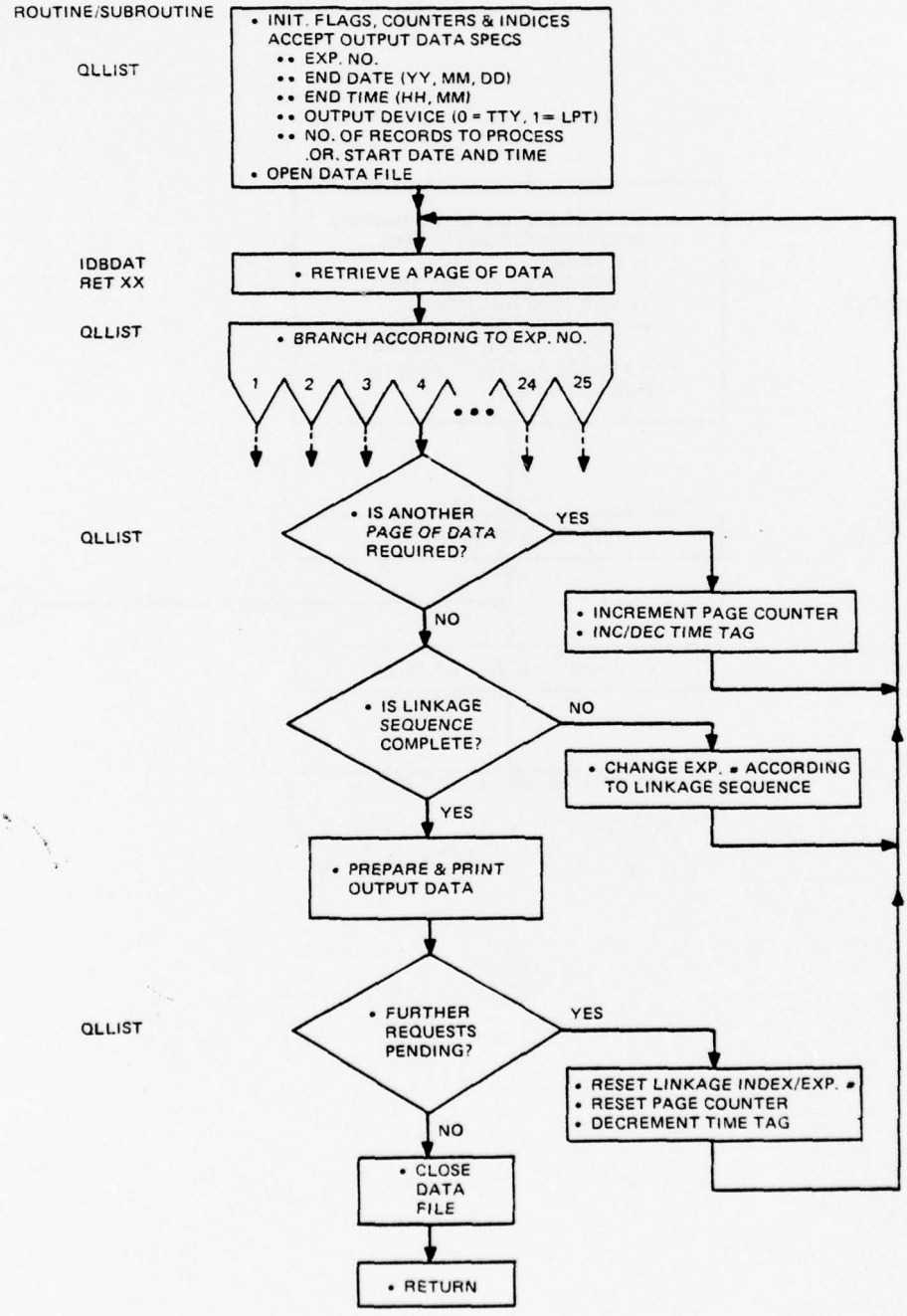
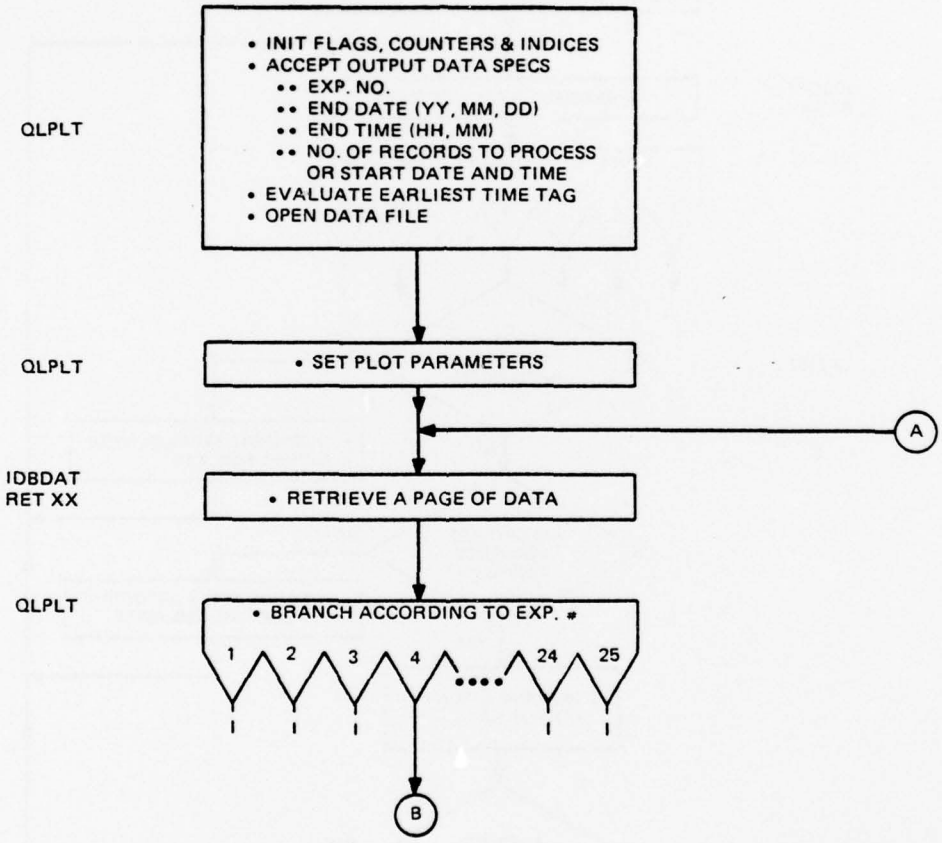


Fig. 3 — Listings display executive (QLLIST)


QLPLT
• INIT FLAGS, COUNTERS & INDICES
• ACCEPT OUTPUT DATA SPECS
•• EXP. NO.
•• END DATE (YY, MM, DD)
•• END TIME (HH, MM)
•• NO. OF RECORDS TO PROCESS OR START DATE AND TIME
• EVALUATE EARLIEST TIME TAG
• OPEN DATA FILE
QLPLT
• SET PLOT PARAMETERS
A
IDBDAT RET XX
• RETRIEVE A PAGE OF DATA
QLPLT
• BRANCH ACCORDING TO EXP. #
1
2
3
4
24
25
B

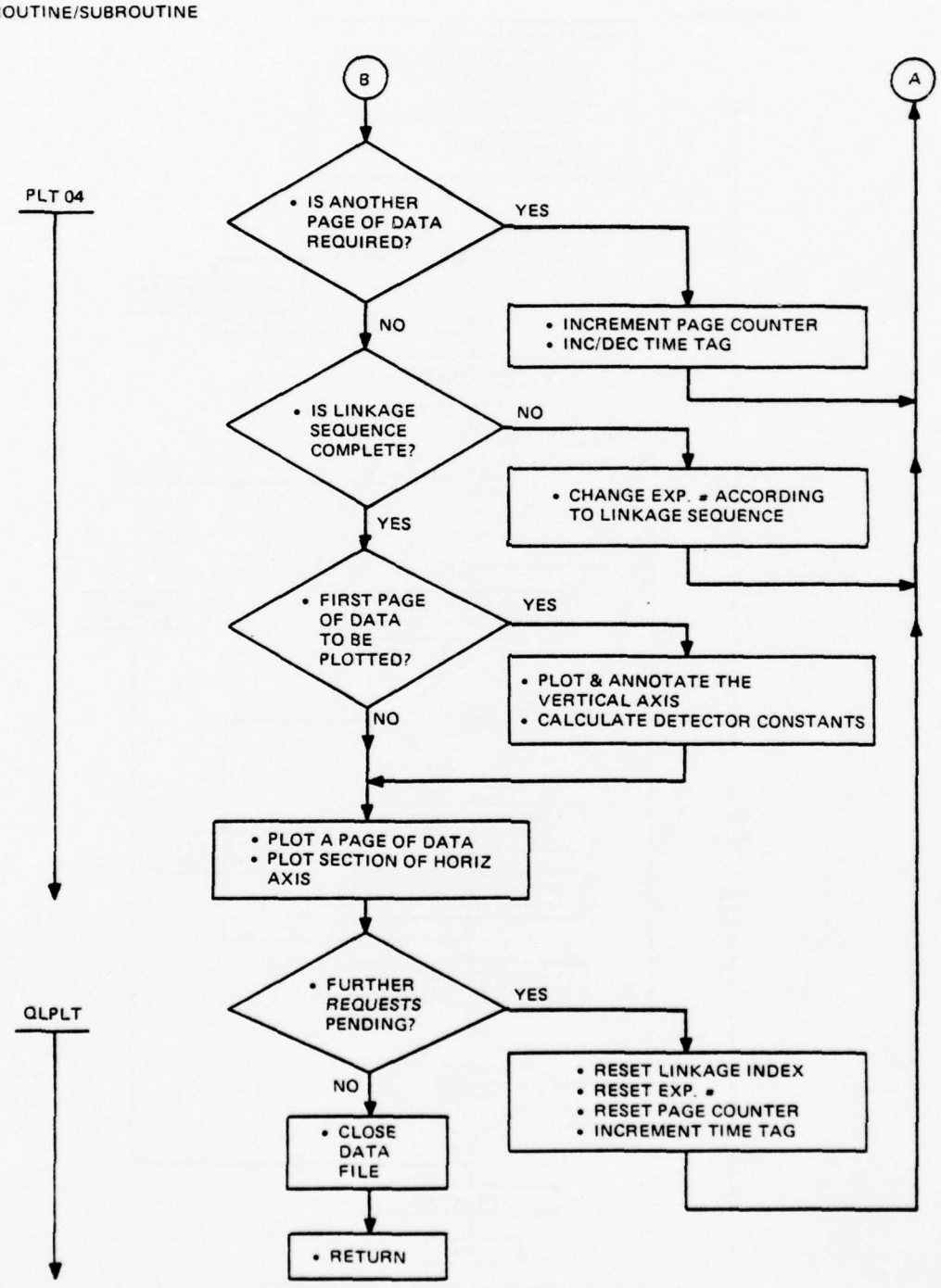


Fig. 4 — Graphical display executive (QLPLT)

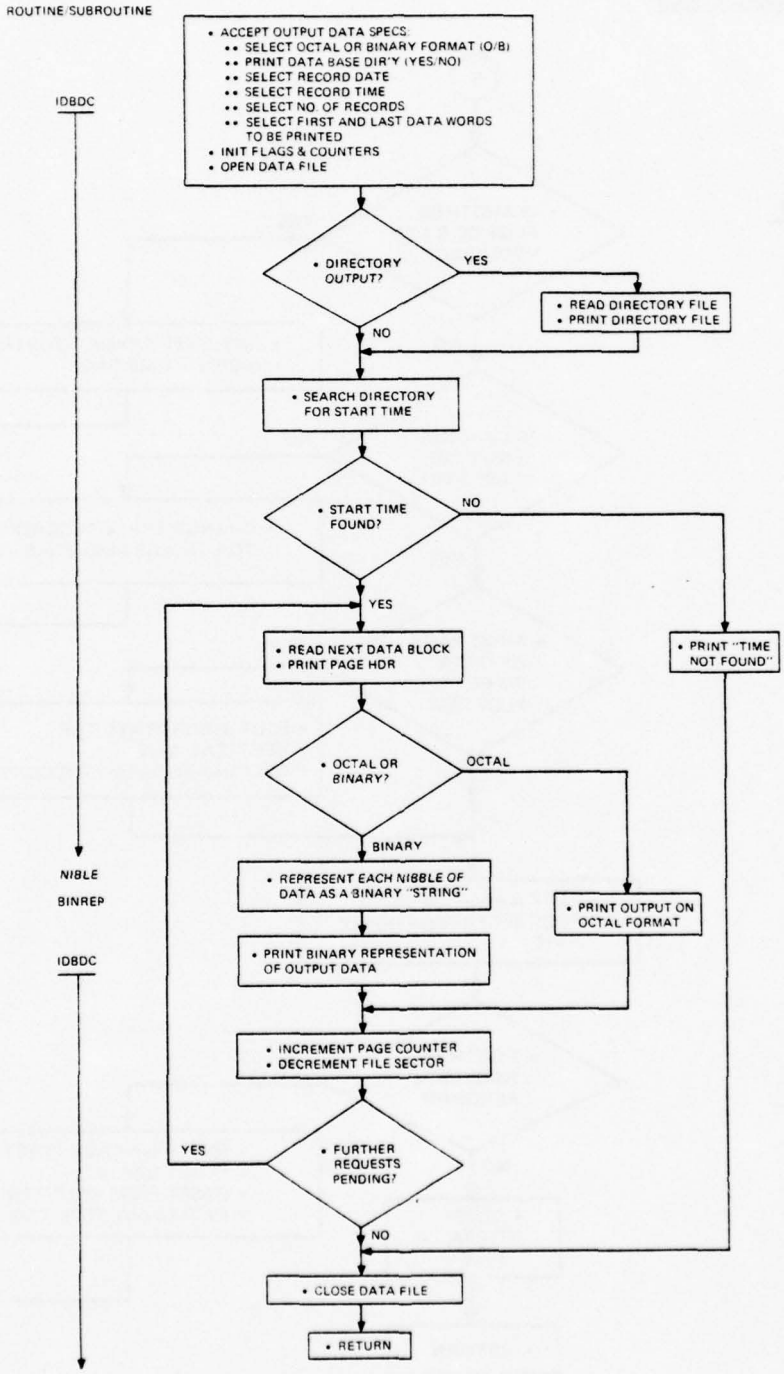


Fig. 5 — Data describe task (IDBDC)

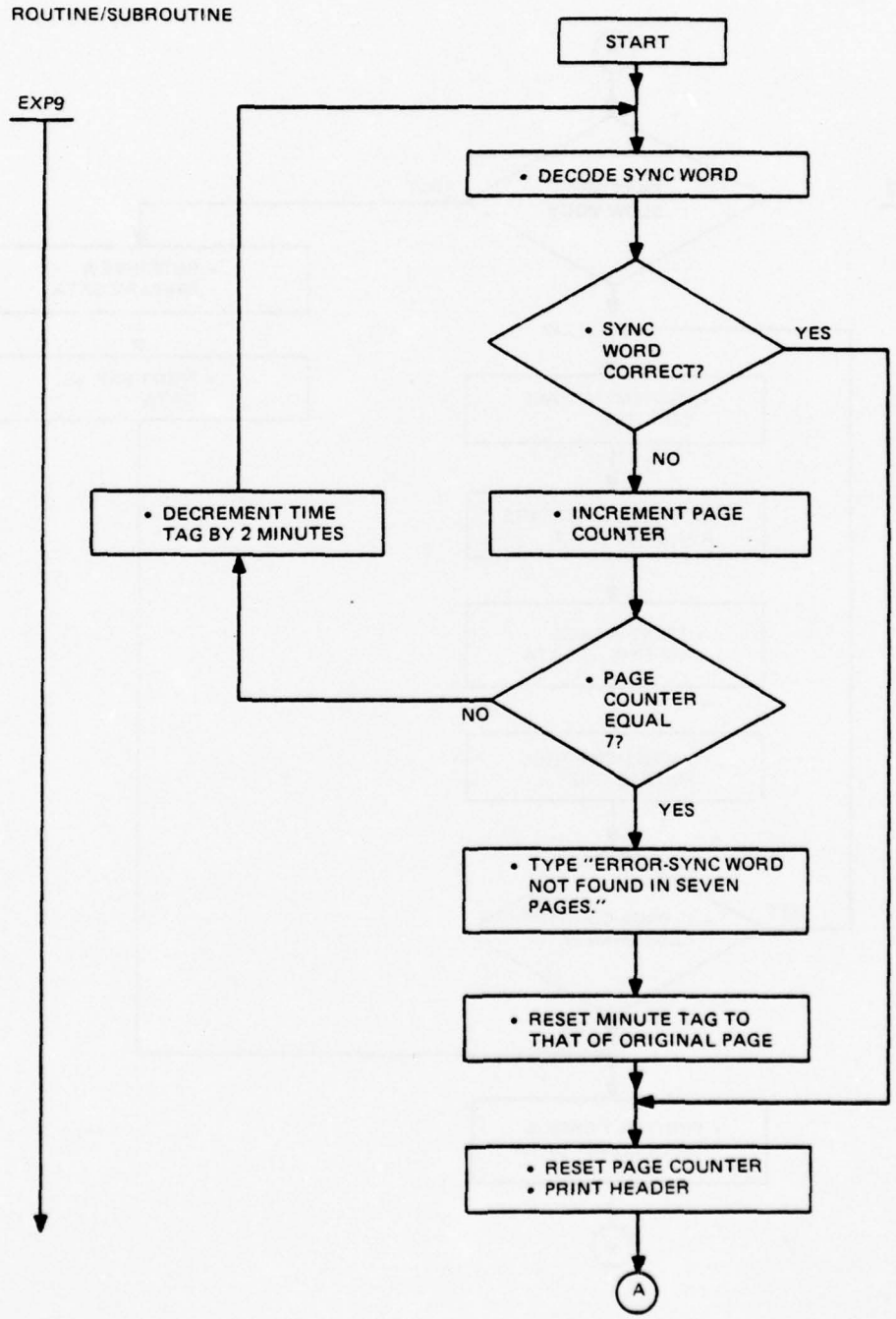
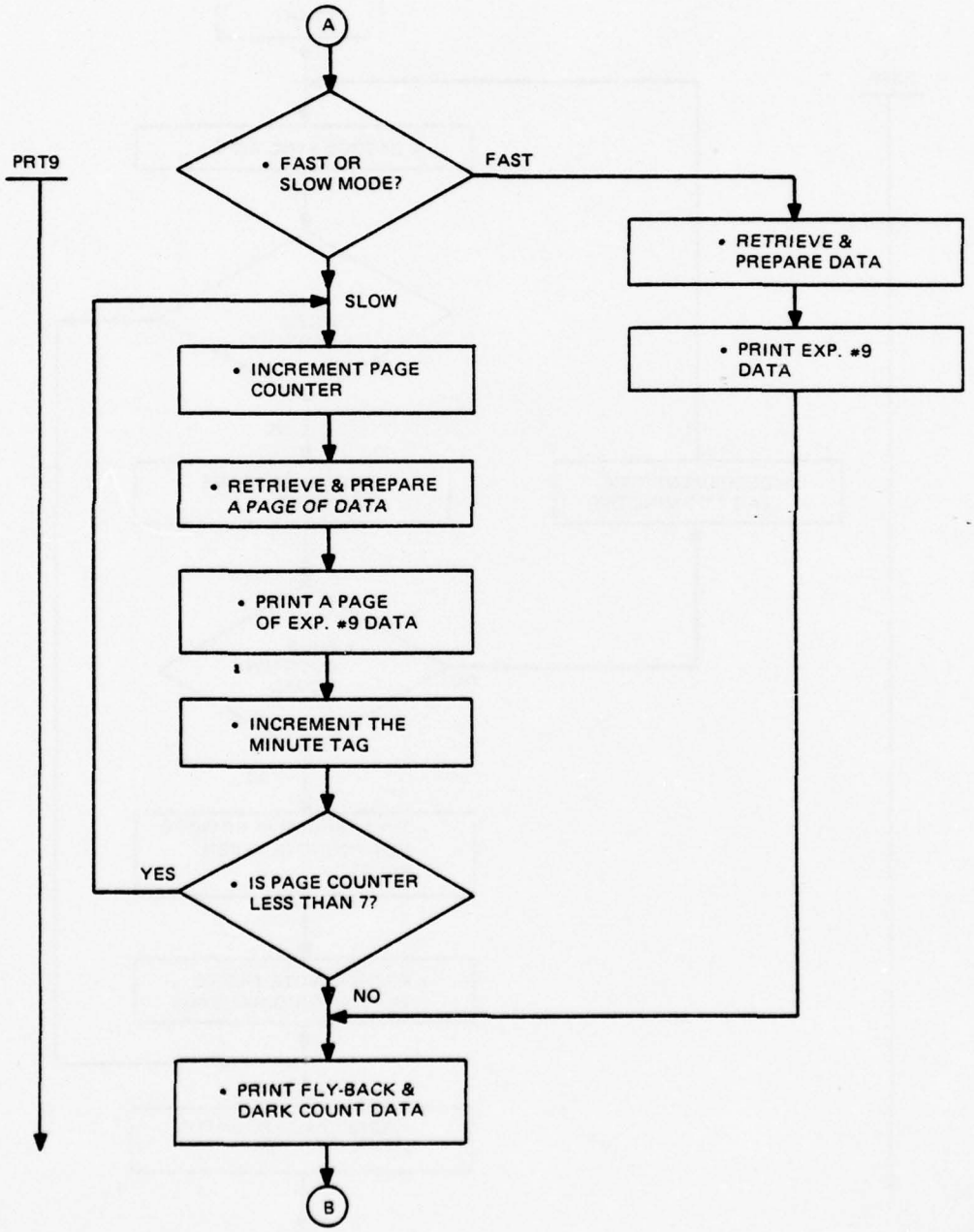


Fig. 6 — Experiment #9 (UV spectrometer) listing (EXP9) (Continues)


A
PRT9
• FAST OR SLOW MODE?
FAST
• RETRIEVE & PREPARE DATA
• PRINT EXP. #9 DATA
SLOW
• INCREMENT PAGE COUNTER
• RETRIEVE & PREPARE A PAGE OF DATA
• PRINT A PAGE OF EXP. #9 DATA
• INCREMENT THE MINUTE TAG
YES
• IS PAGE COUNTER LESS THAN 7?
NO
• PRINT FLY-BACK & DARK COUNT DATA
B

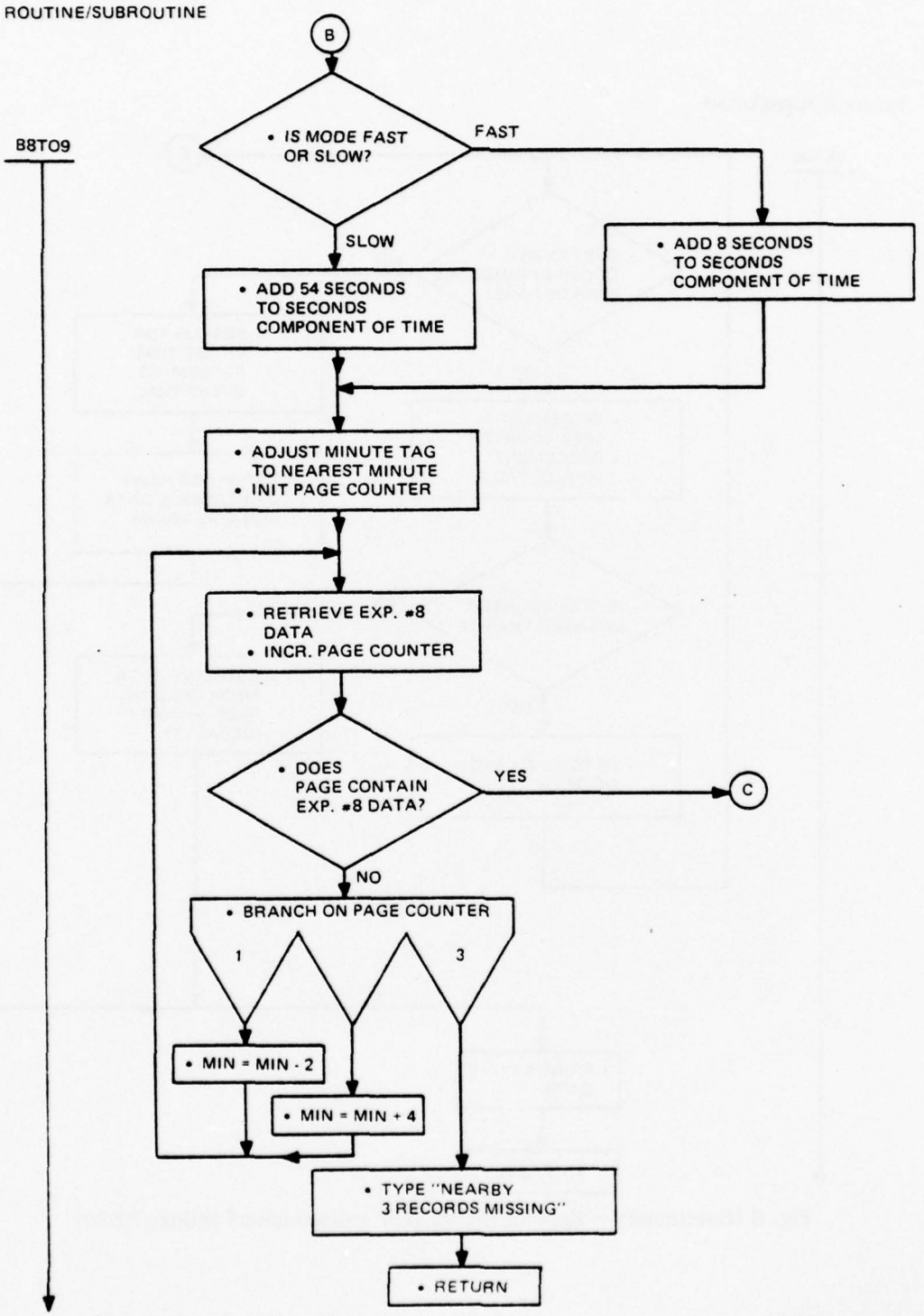


Fig. 6 (Continued) — Experiment #9 (UV spectrometer) listing (EXP9)

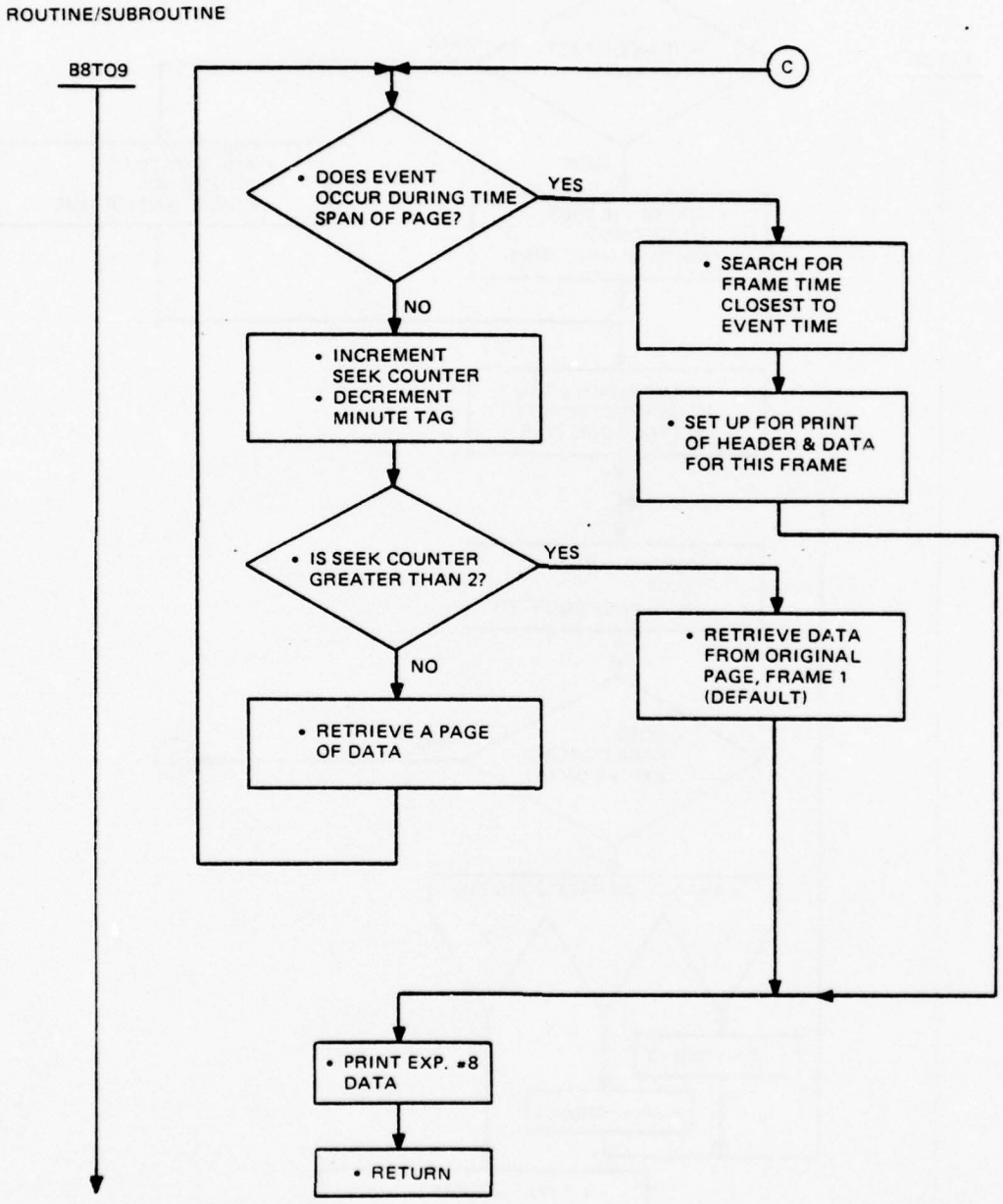


Fig. 6 (Continued) — Experiment #9 (UV spectrometer) listing (EXP9)

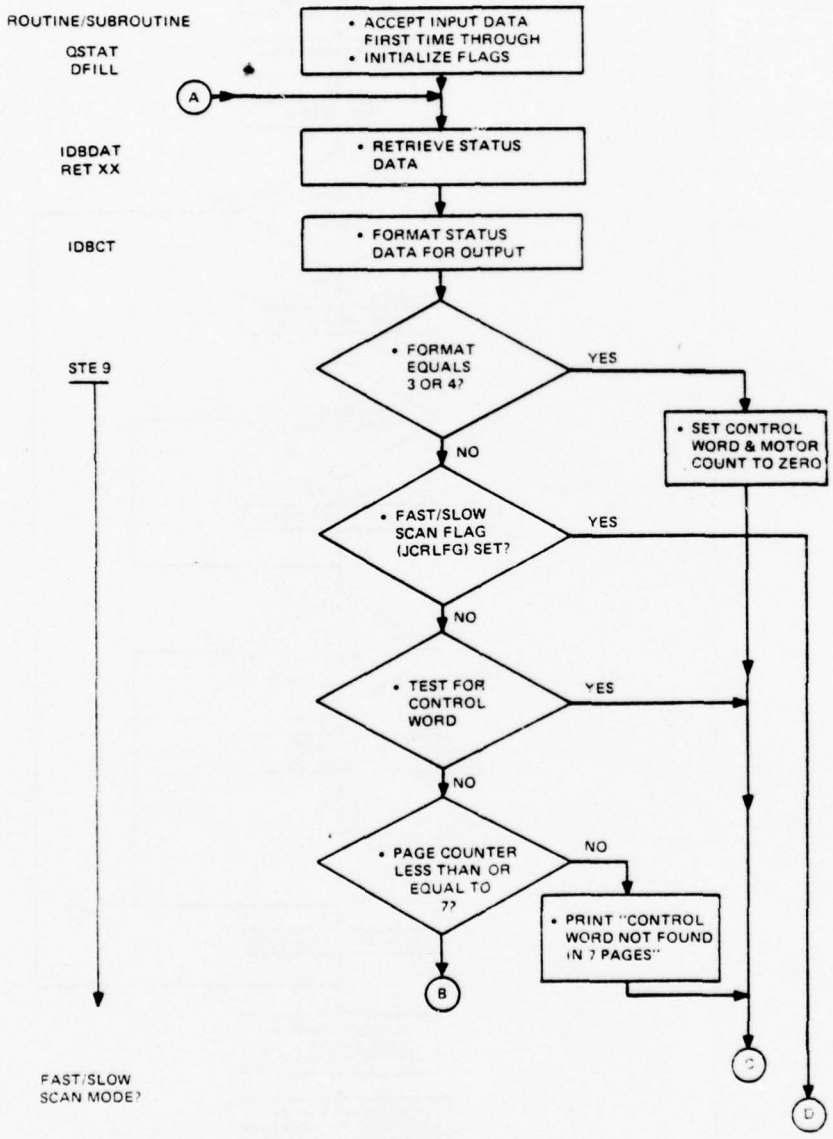
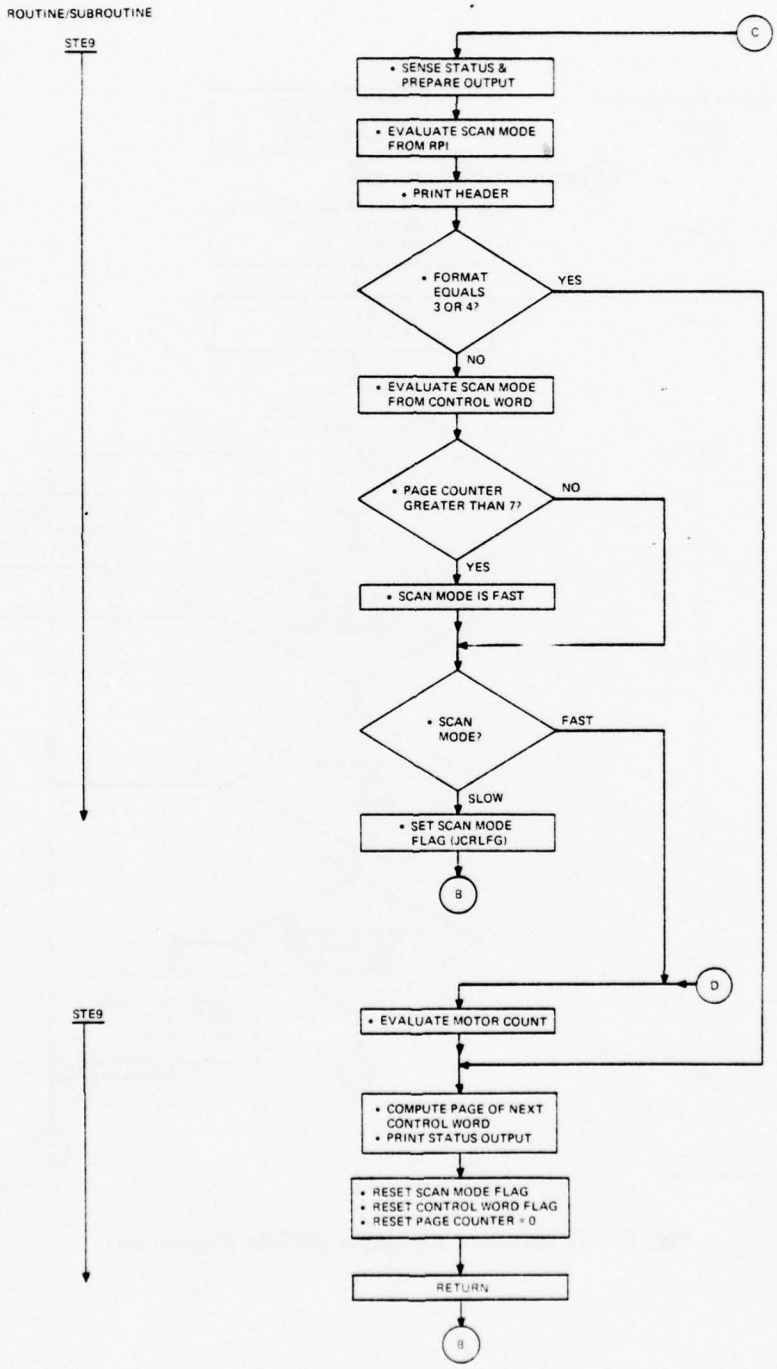


Fig. 7 — Experiment #9 status (STE9) (Continues)


ROUTINE/SUBROUTINE
STE9
C
• SENSE STATUS & PREPARE OUTPUT
• EVALUATE SCAN MODE FROM RPI
• PRINT HEADER
• FORMAT EQUALS 3 OR 4?
YES
NO
• EVALUATE SCAN MODE FROM CONTROL WORD
• PAGE COUNTER GREATER THAN 7?
NO
YES
• SCAN MODE IS FAST
• SCAN MODE?
FAST
SLOW
• SET SCAN MODE FLAG (JCRLFG)
B
D
STE9
• EVALUATE MOTOR COUNT
• COMPUTE PAGE OF NEXT CONTROL WORD
• PRINT STATUS OUTPUT
• RESET SCAN MODE FLAG
• RESET CONTROL WORD FLAG
• RESET PAGE COUNTER = 0
RETURN
B

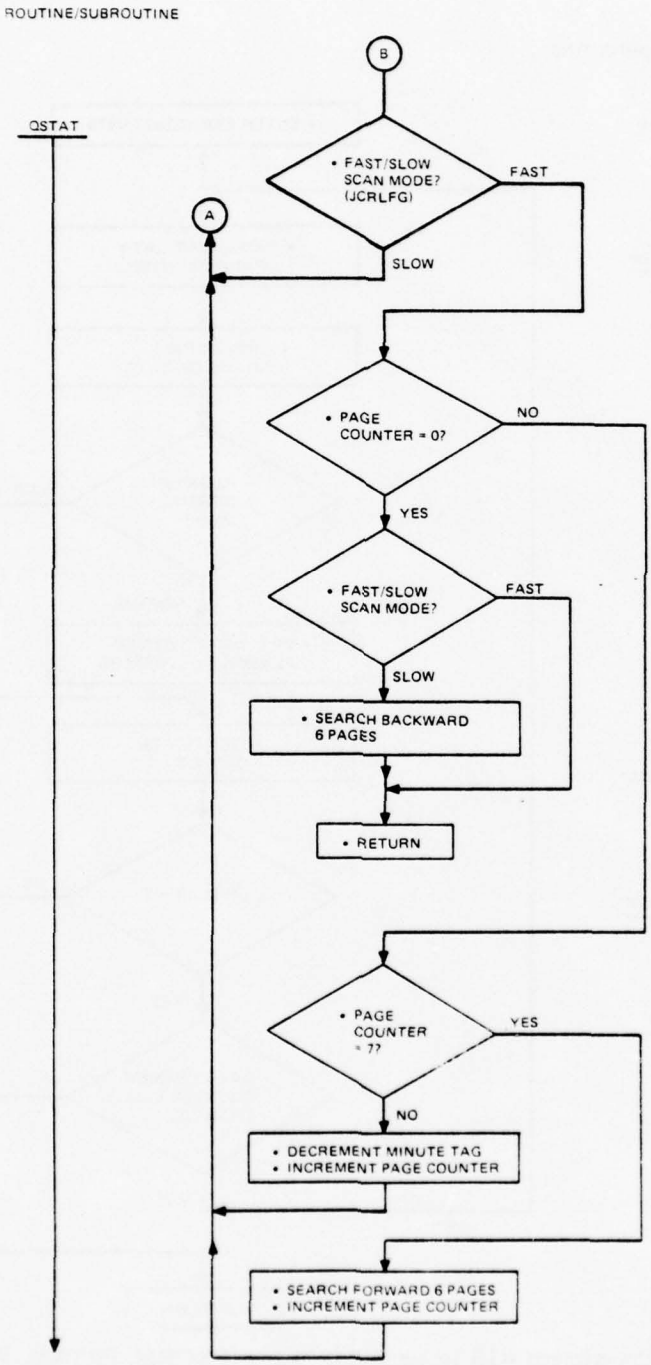


Fig. 7 (Continued) — Experiment #9 status (STE9)

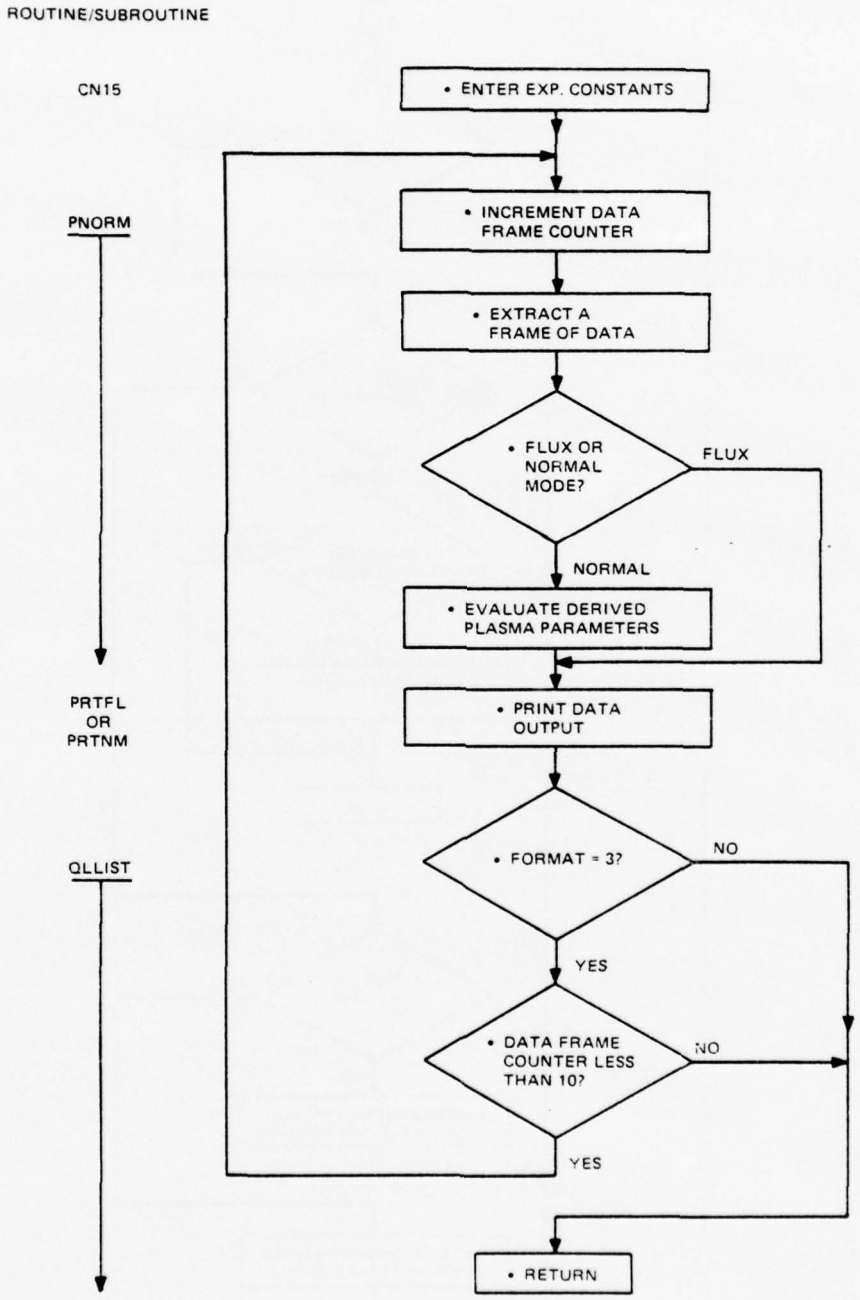


Fig. 8 — Experiment #15 (solar wind) listing (PNORM, PRTNM, PRTFL)

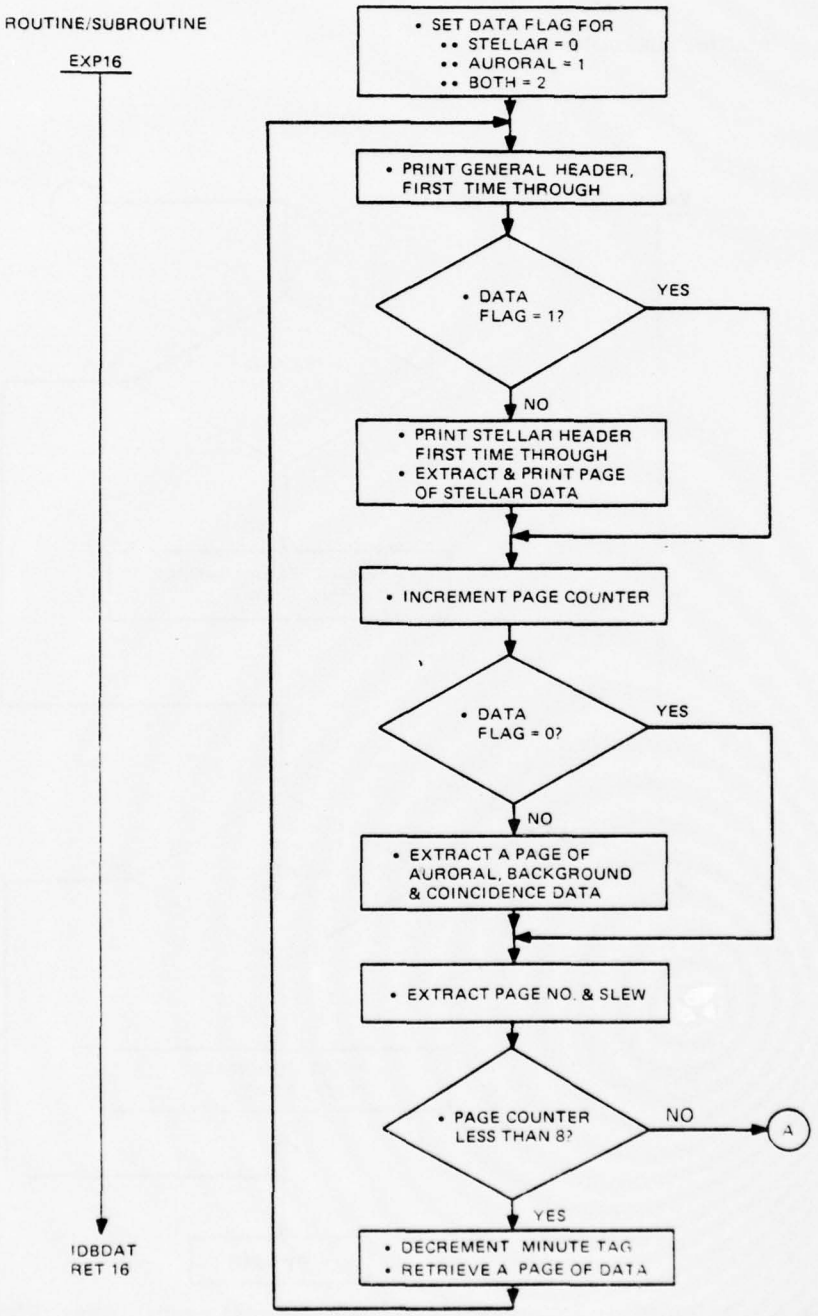


Fig. 9 — Experiment #16 (stellar/auroral x-rays) listing (EXP16) (Continues)

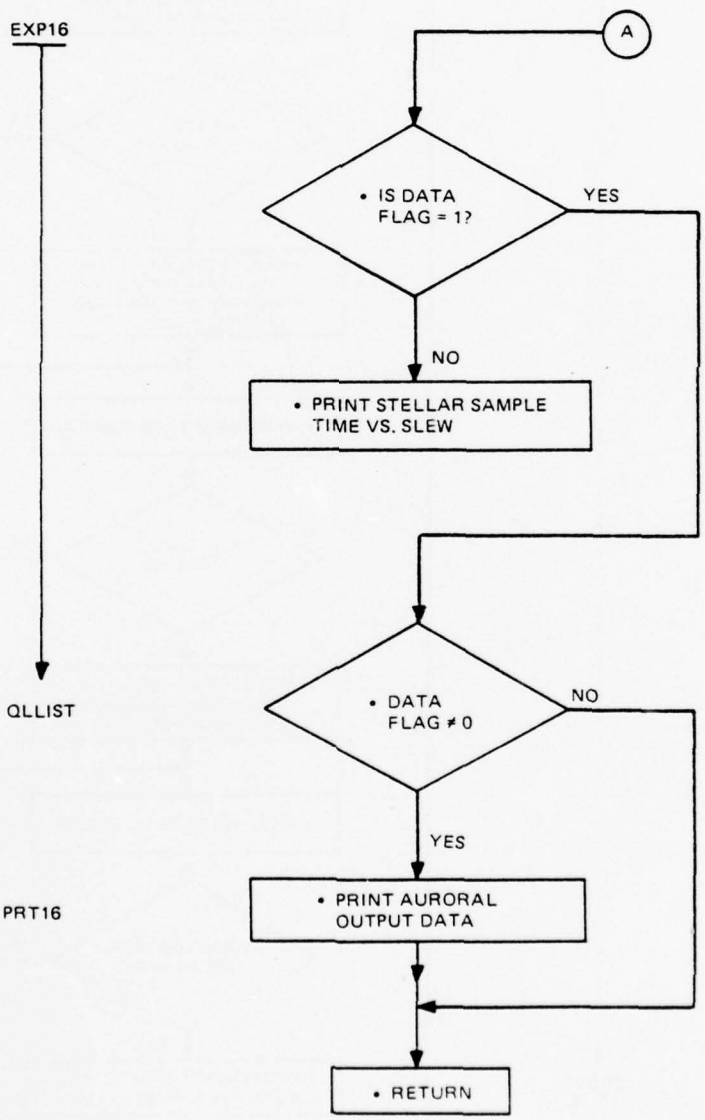


Fig. 9 (Continued) — Experiment #16 (stellar/auroral x-rays) listing (EXP16)

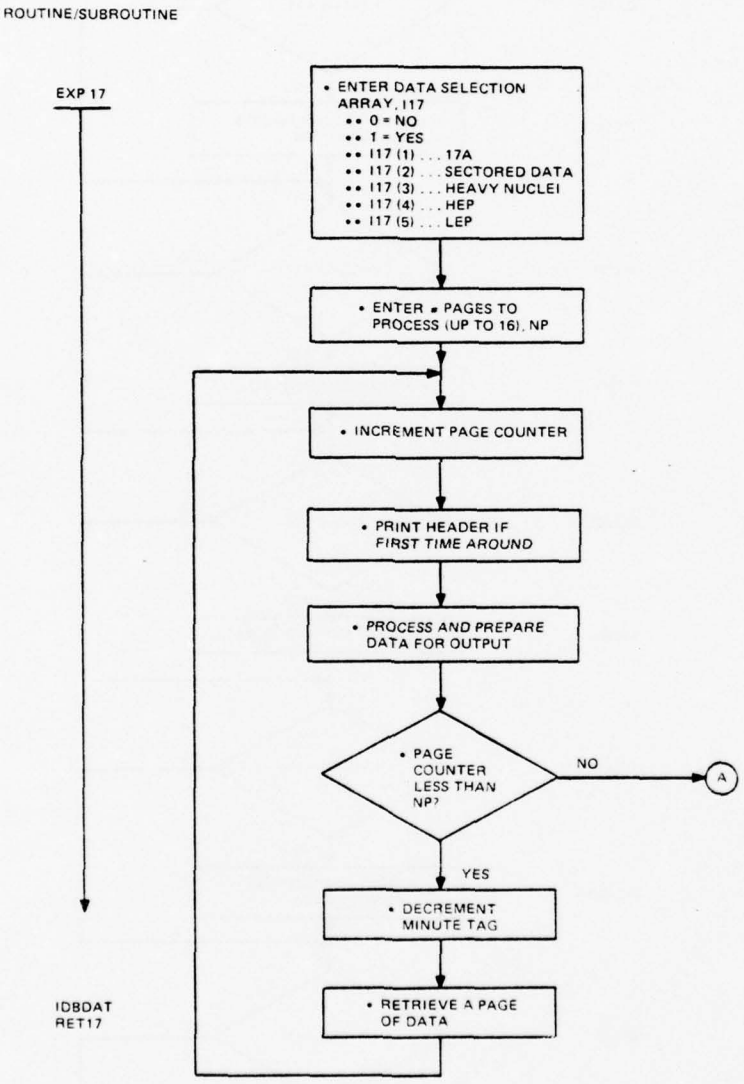


Fig. 10 — Experiment #17 (omni solar protons) listing (EXP17) (Continues)

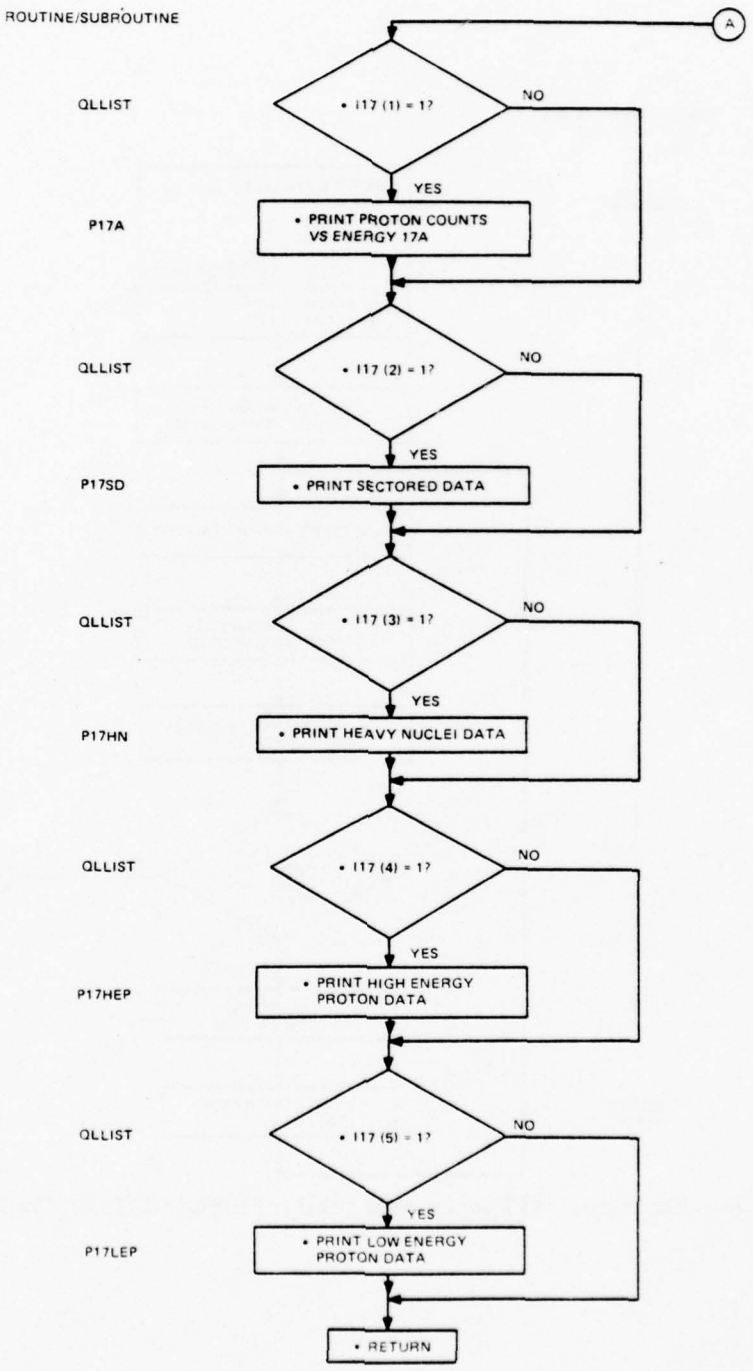


Fig. 10 (Continued) — Experiment #17 (omni solar protons) listing (EXP17)

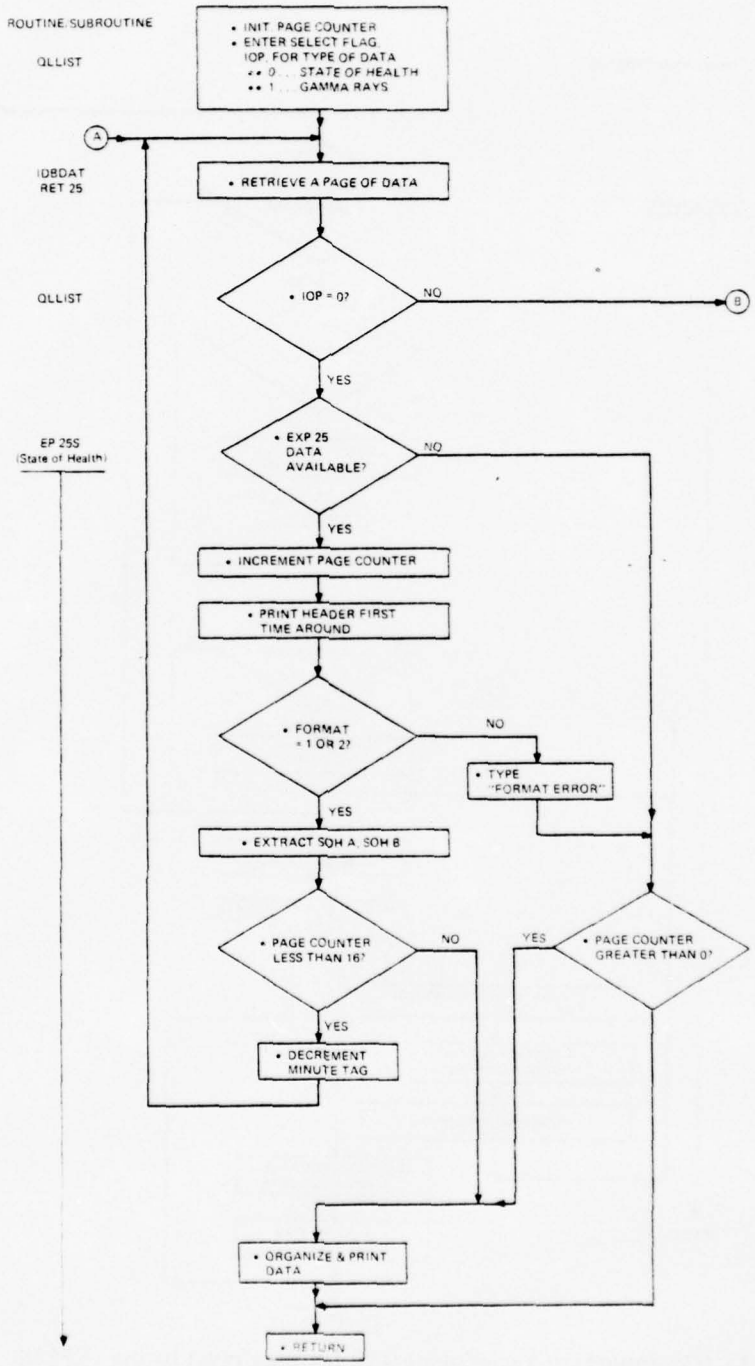


Fig. 11 — Experiment #25 (gamma rays) listing (EP25S, EP25G) (Continues)

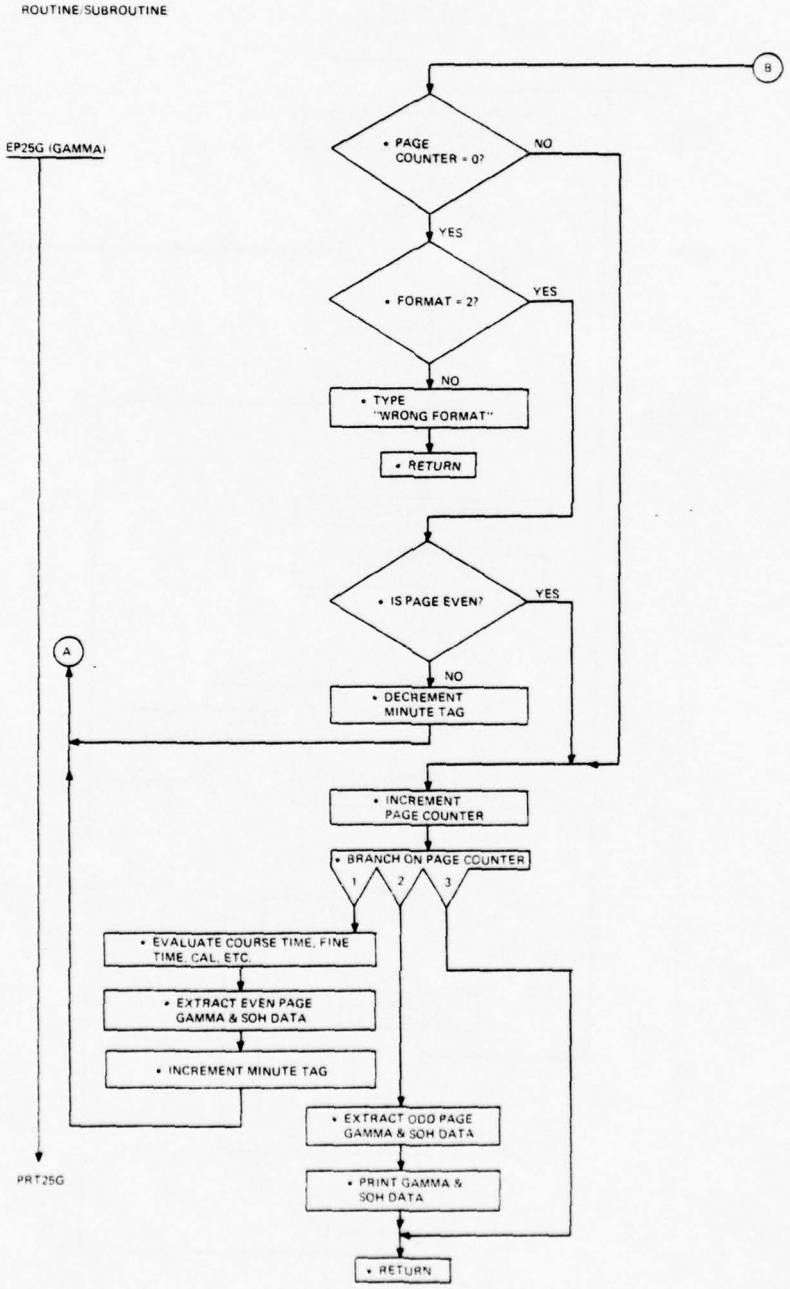


Fig. 11 (Continued) — Experiment #25 (gamma rays) listing (EP25S, EP25G)

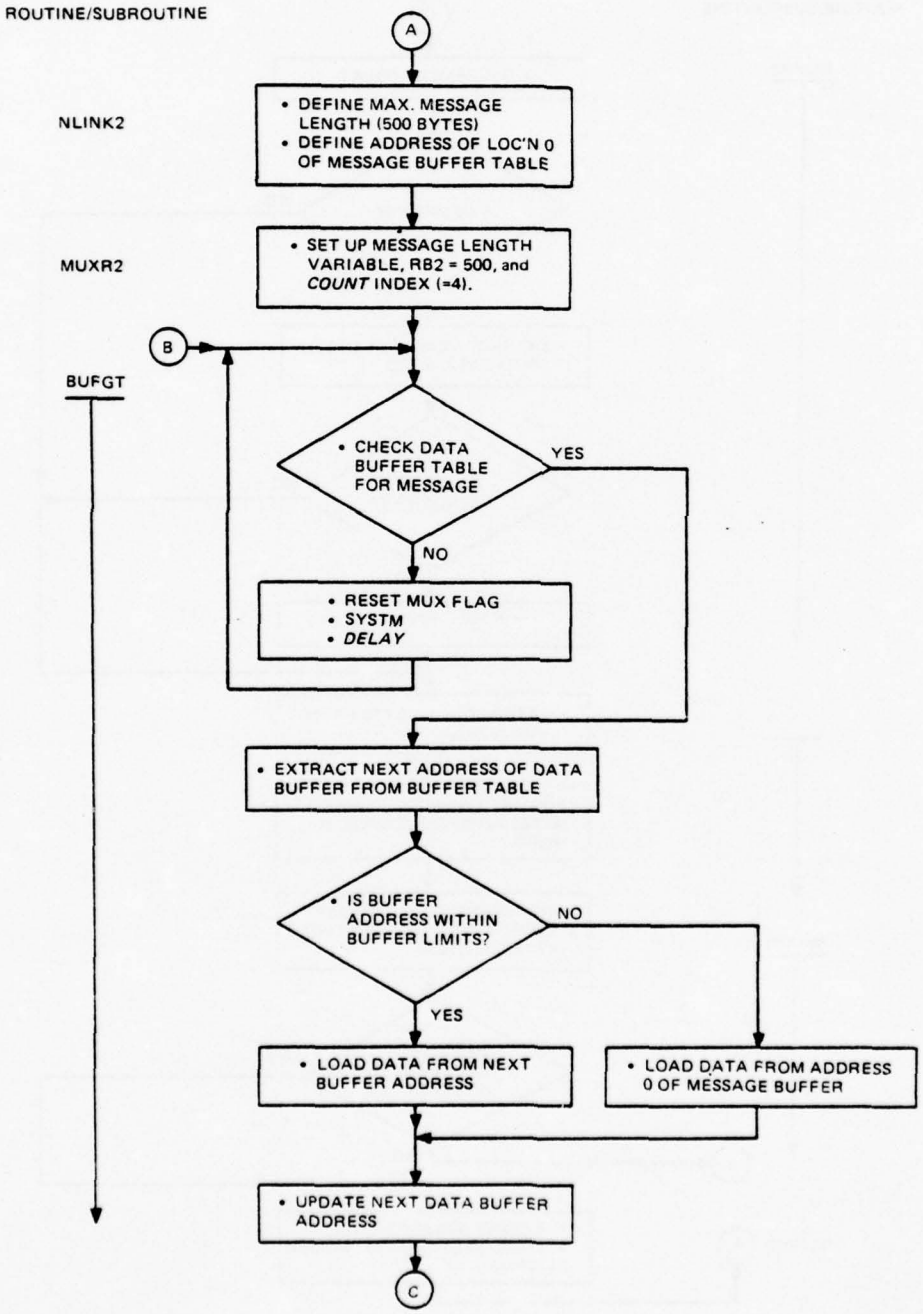


Fig. 12 — Communications driver task (NLINK2) (Continues)

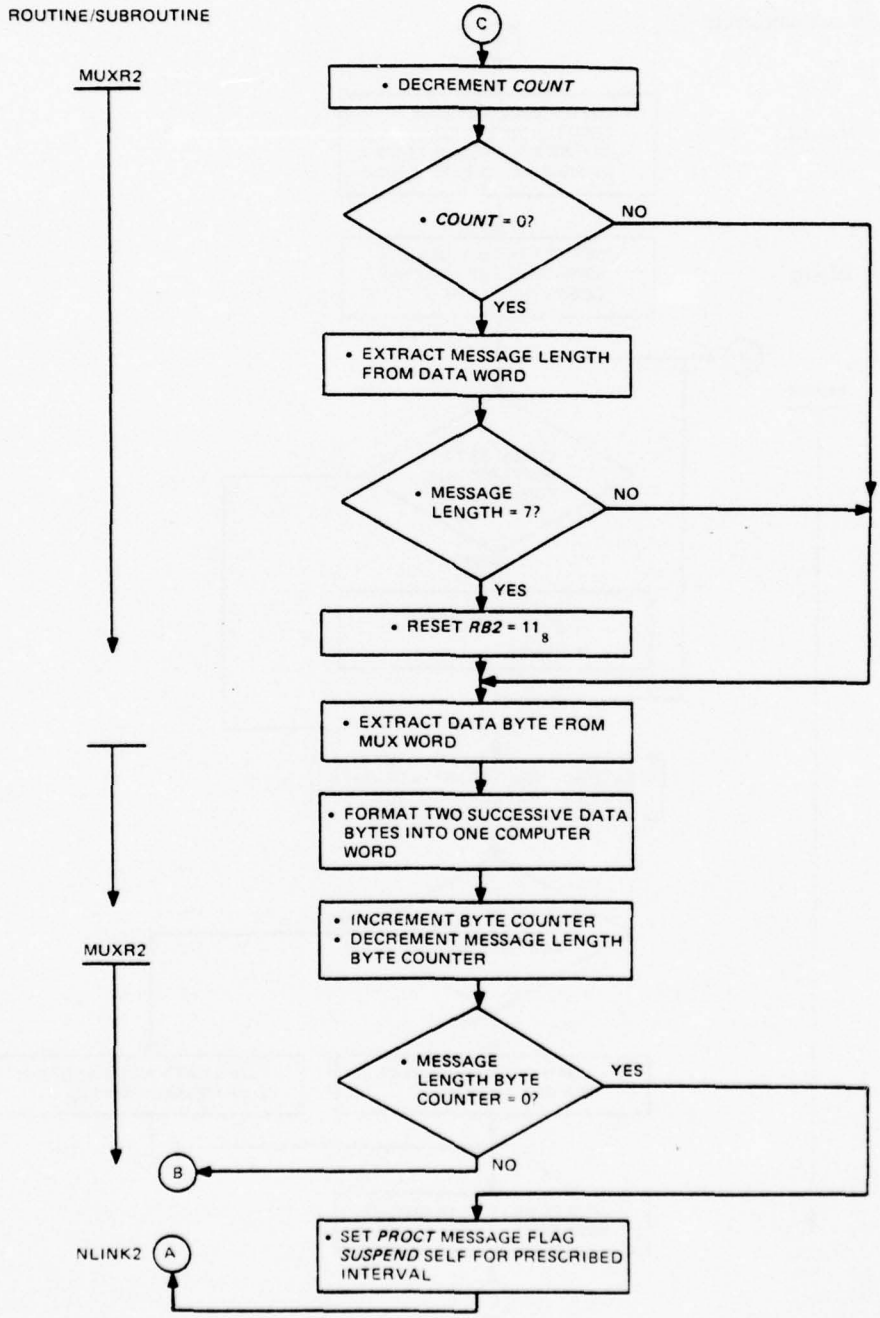


Fig. 12 (Continued) — Communications driver task (NLINK2)

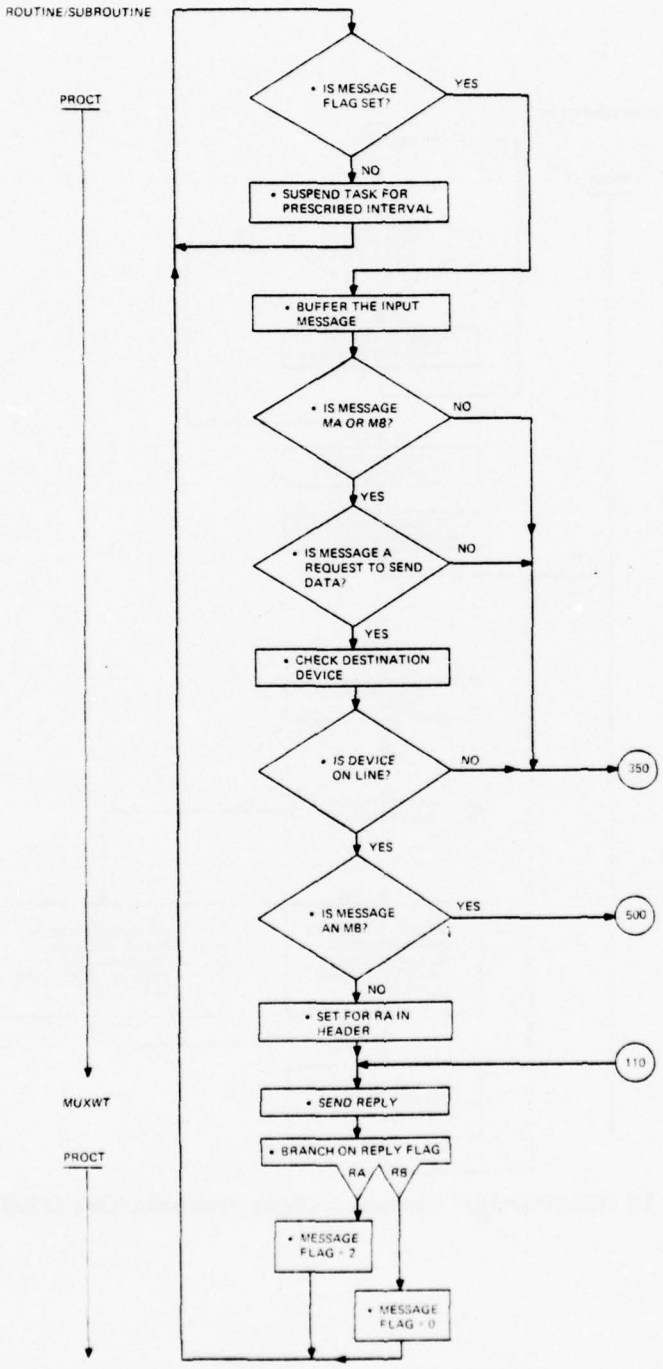


Fig. 13 — Communications processing task (PROCT) (Continues)

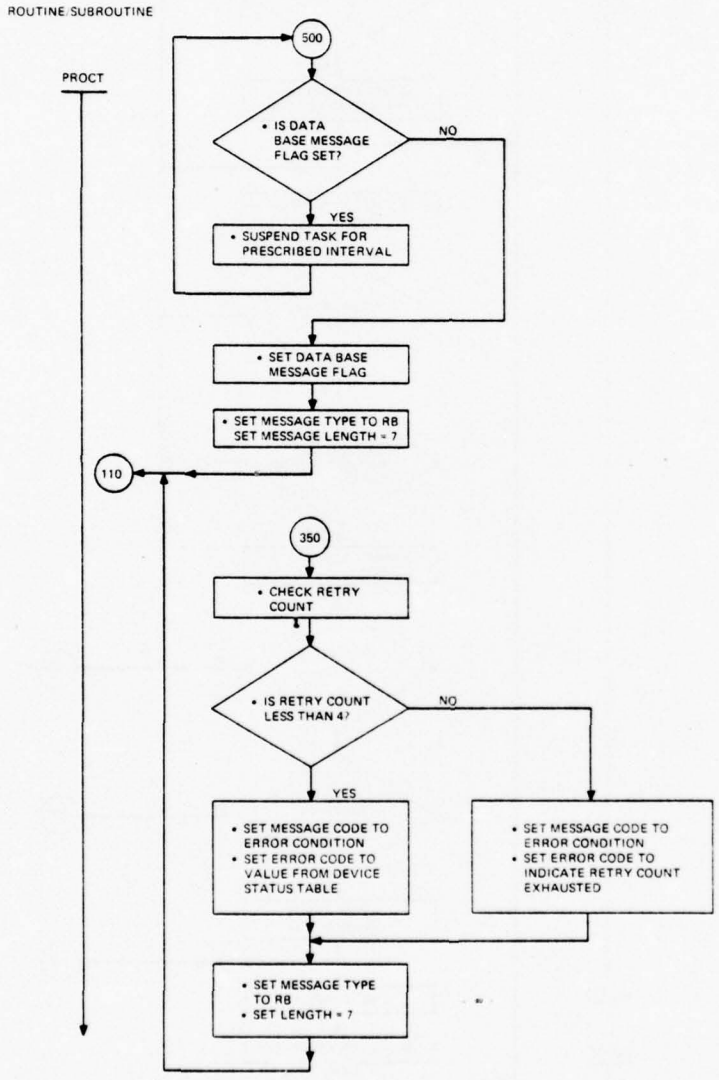


Fig. 13 (Continued) — Communications processing task (PROCT)

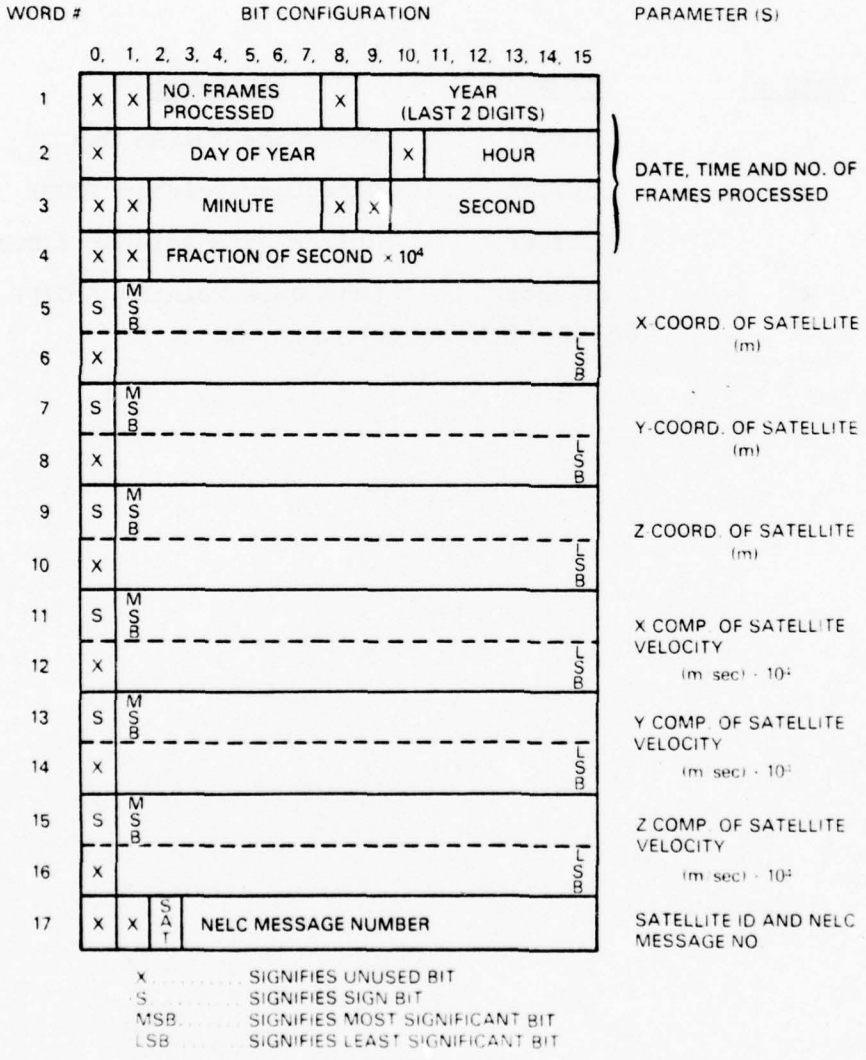


Fig. 14 — Archival data base header

WORD #	FORMAT	PARAMETER
1	Integer	Reference Julian Day
2	Integer	Directory Pointer (IDP)
3	Integer	Julian Date Pointer (JDTP)
4	Integer	Data Base Pointer (IDBP)

Fig. 15 — Data base directory header

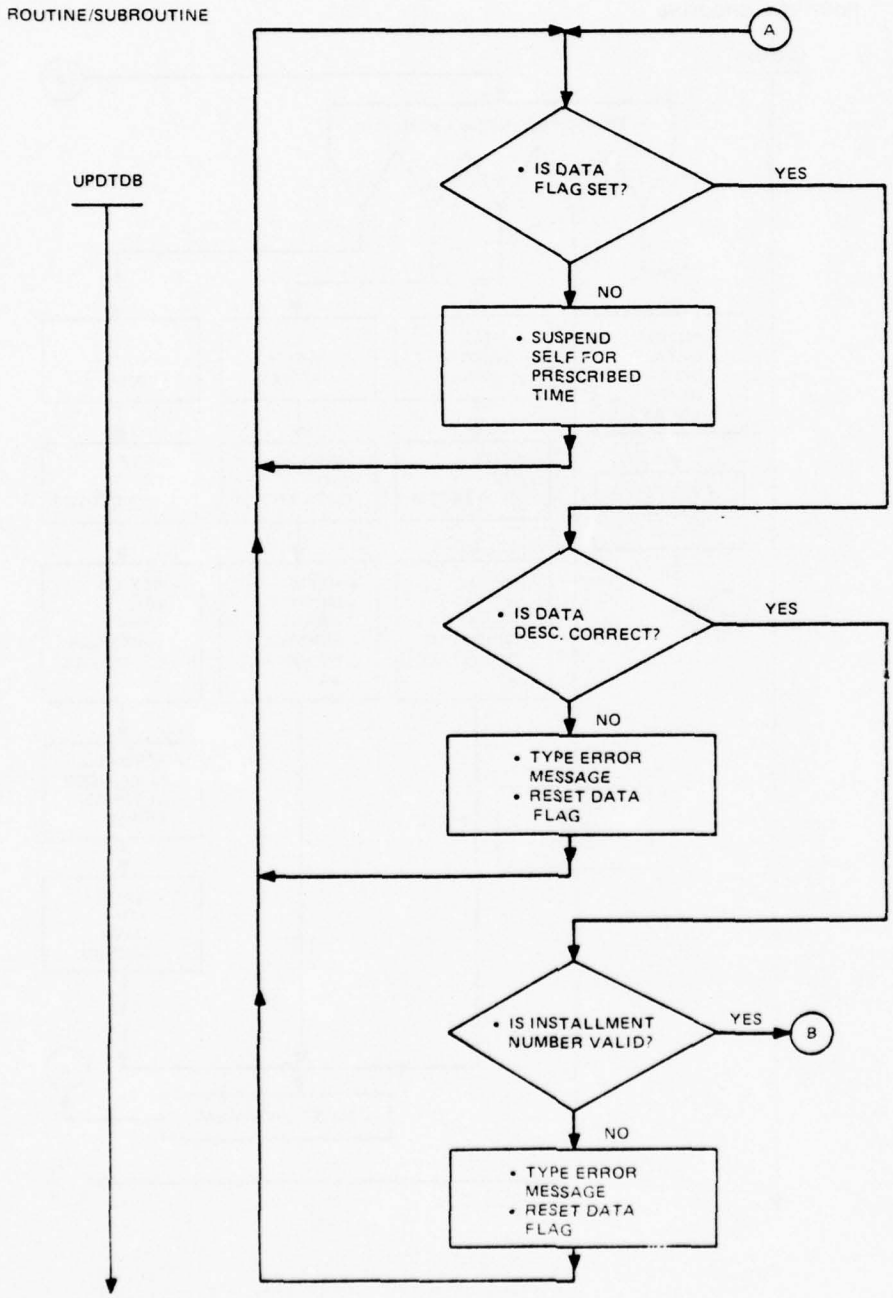
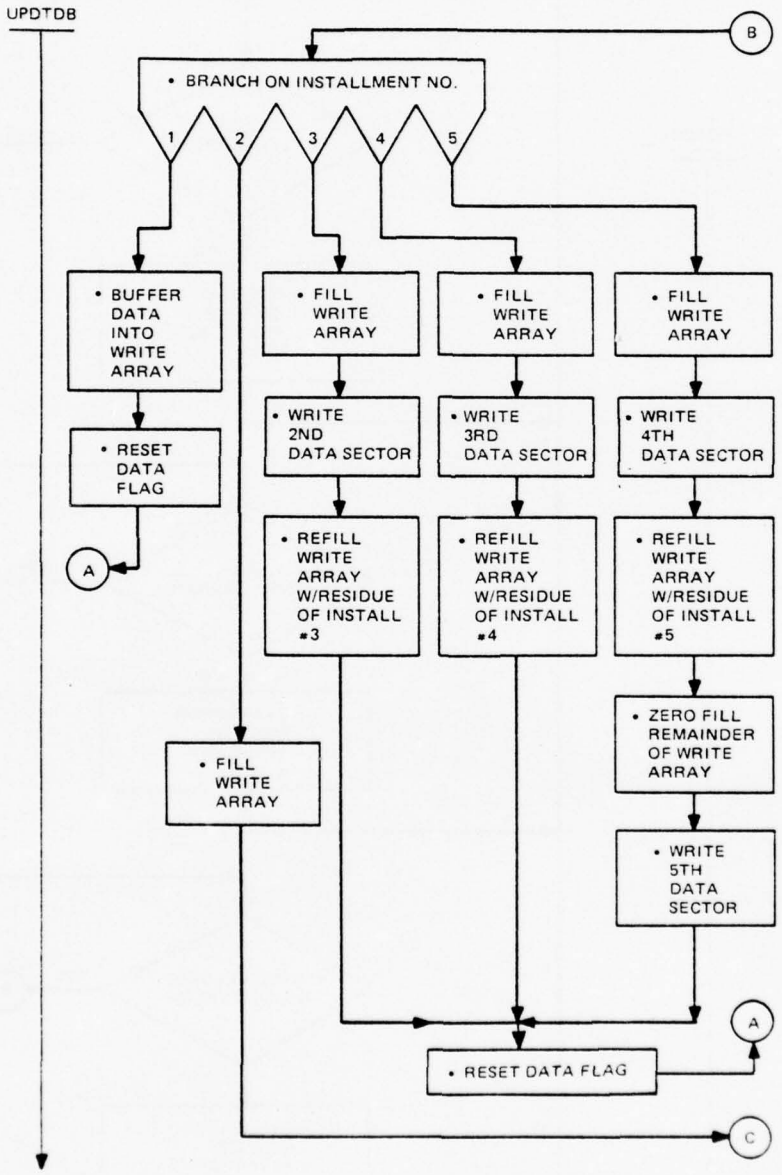


Fig. 16 — Disk data base write task (UPDTDB) (Continues)

ROUTINE/SUBROUTINE



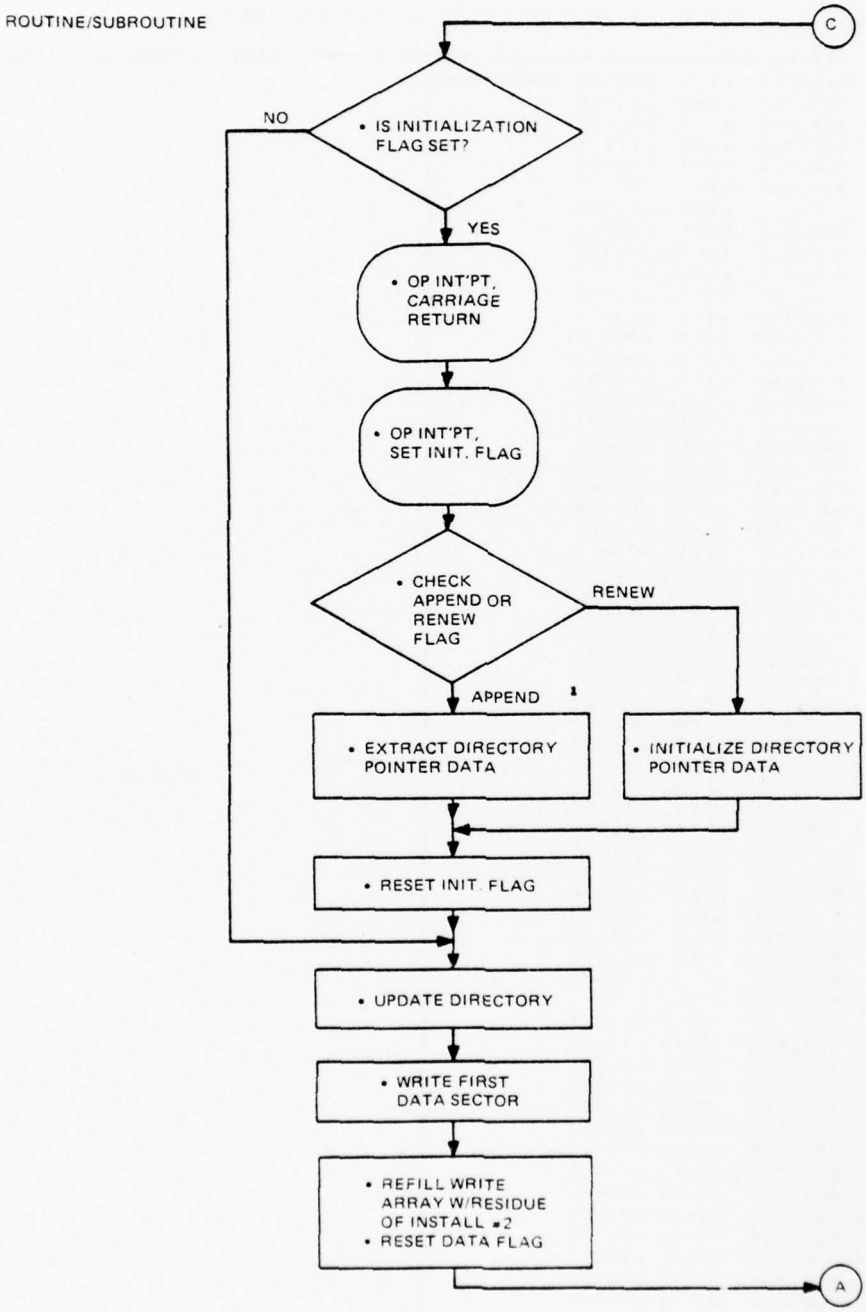
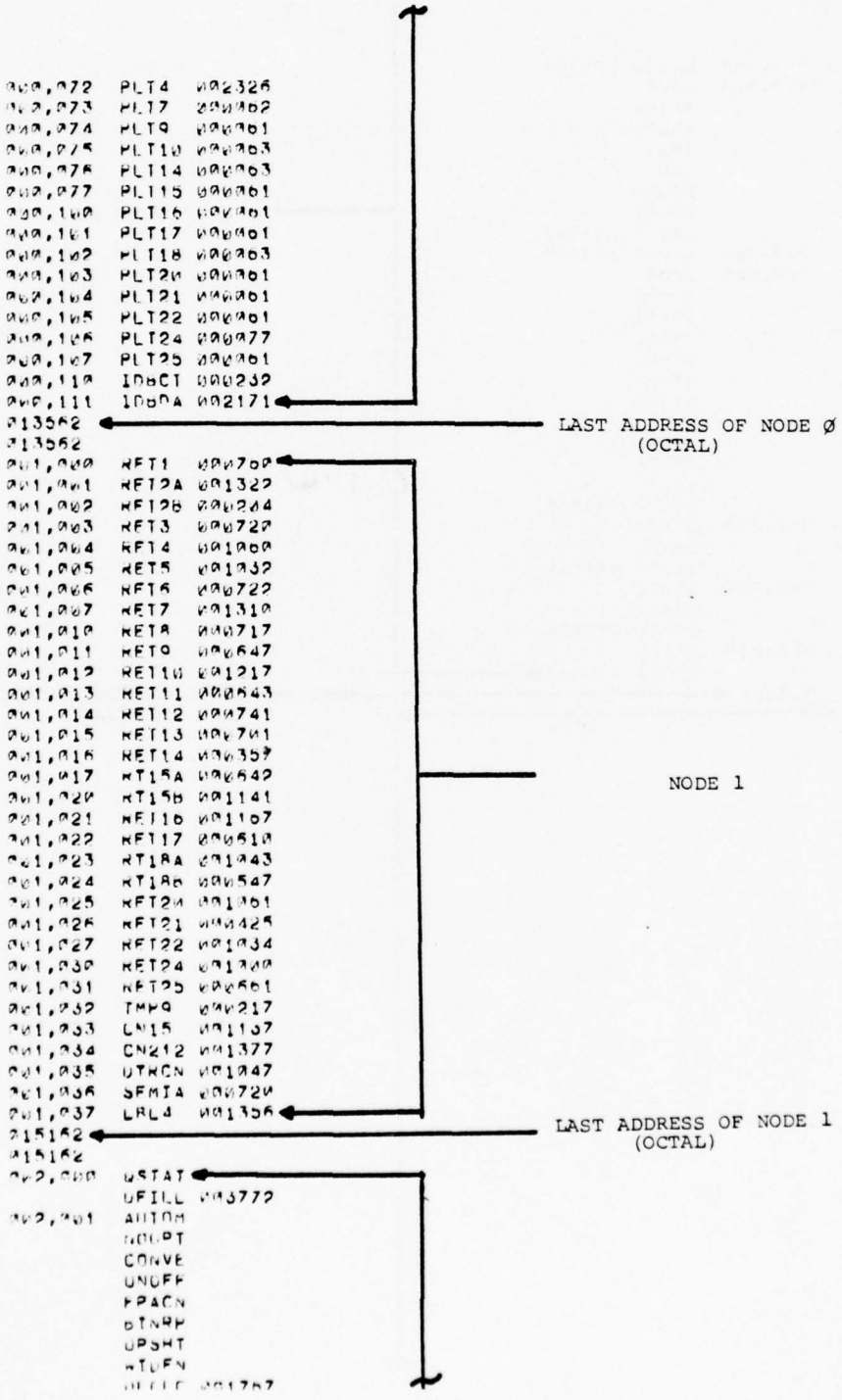
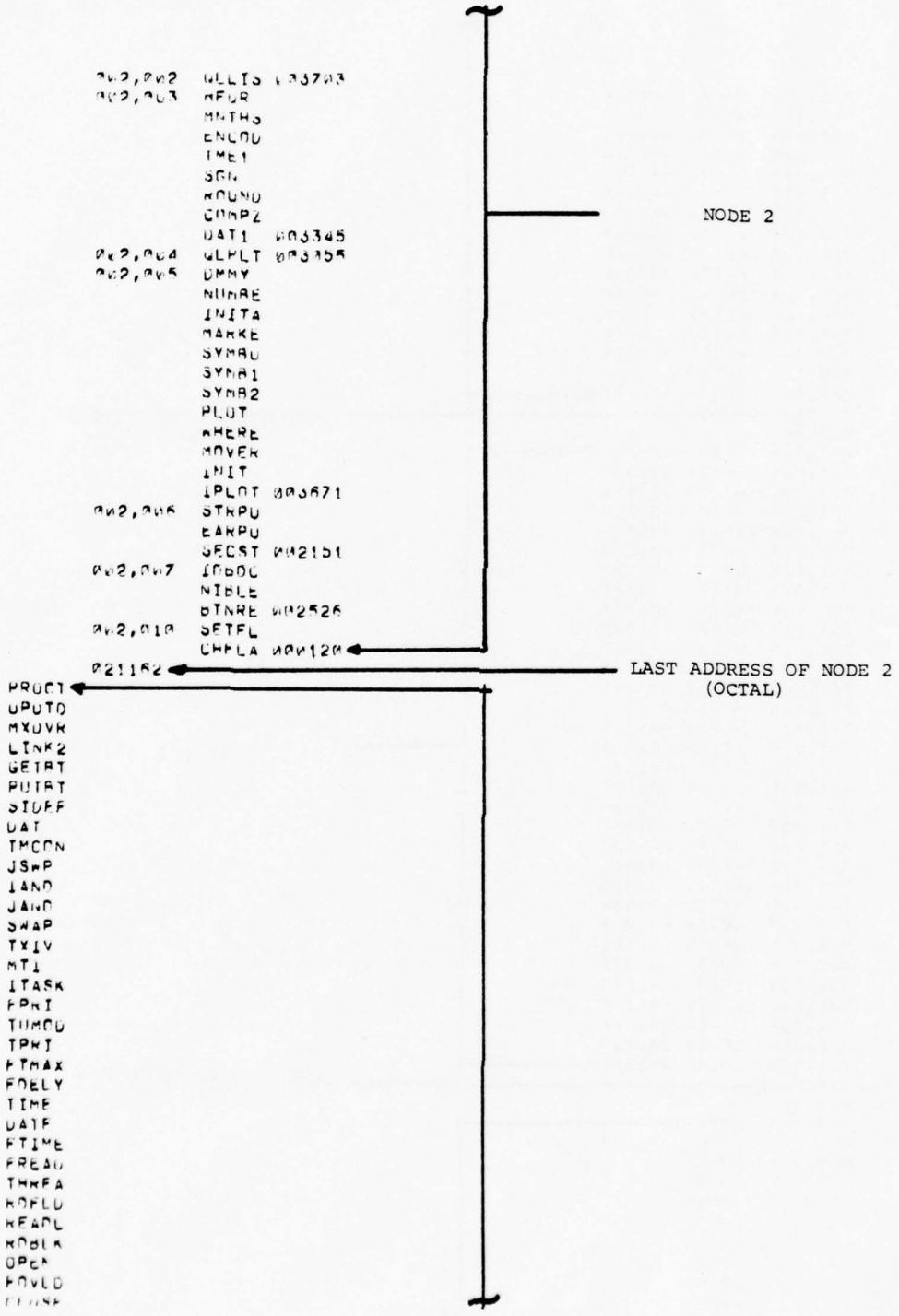


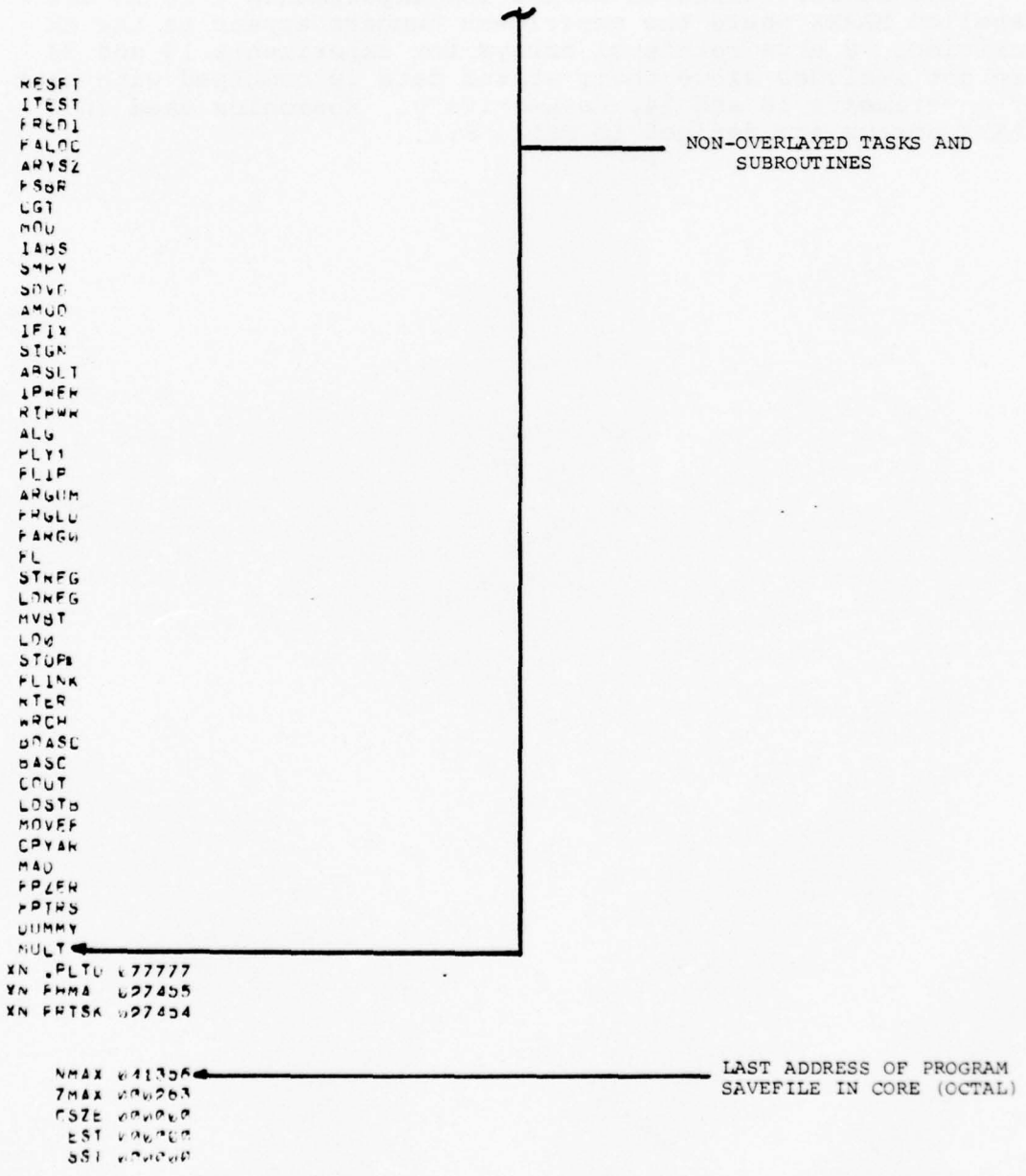
Fig. 16 (Continued) — Disk data base write task (UPDTDB)

APPENDIX A: RELOCATABLE LOADER LISTING (SOLOLS)

```
QLOOK.SV        LOADED BY RLOK REV 03.01 AT 21:53:11 12/22/76
.MAIN
        011162  <-- LAST ADDRESS OF QLOOK-MAIN (OCTAL)
000,000  EXP1   002000  <-- NODE 0
000,001  EXP2   001716
000,002  EXP3   002125
000,003  EXP4   001713
000,004  PRT4   001774
000,005  EXP7
         EXP8   002004
000,006  PRT7   001615
000,007  EXP10  001340
000,010  EXP11  000403
000,011  PRT10  001605
000,012  EXP9   001230
000,013  PRT9   001707
000,014  BRT09  002023
000,015  EXP14  001637
000,016  PNORM  001237
000,017  PRTFL  001071
000,020  PRTNM  001435
000,021  EXP15  002245
000,022  PRT15  001404
000,023  EXP17  001502
000,024  P17A   001206
000,025  P17SD  001172
000,026  P17HN  001034
000,027  P17HE  001036
000,030  P17LE  001057
000,031  EXP16  001361
000,032  EXP20  001631
000,033  PRT20  002265
000,034  EXP21  001734
000,035  EXP22  002124
000,036  PRT22  001755
000,037  EXP24  001672
000,040  EP25G  002261
000,041  EP25S  002105
000,042  PRT25  002351
000,043  STE1   001346
000,044  STE2   002206
000,045  STE3   001204
000,046  STE4   001370
000,047  SPE4   001245
000,050  STE7   002173
000,051  STE9   002170
000,052  STE14
         TMP17  001717
000,053  STE10  001107
000,054  SPE10  001501
000,055  STE15  001631
000,056  STE16  001516
000,057  STE18  001625
000,060  STE20  002240
000,061  STE21  001736
000,062  STE25  001721
000,063  STE24  001250
000,064  PRTA1  001770
000,065  PRTA2  001213
000,066  PRTA3  000705
000,067  PLTT1  000401
000,070  PLT2   000401
000,071  PLT3   000401
```







APPENDIX B: DATA LAYOUT IN STATUS RETRIEVAL ARRAY

The status retrieval arrays for experiments 1 to 25 are labelled NARXX where the experiment numbers appear in the XX position. Status retrieval arrays for experiments 19 and 23 are not included since their status data is combined with that of experiments 18 and 14, respectively. Mnemonics used in NARXX arrays are defined in Table B:1.

TABLE B:1 MNEMONIC GLOSSARY

1A - HV1A Voltage Setting
1B - HV1B Voltage Setting
2A - HV2A Voltage Setting
2B - HV2B Voltage Setting
A1 - Wide-Fine Sensor Select
AB - A/B Select
AC - Attitude Control System On/Off
AD - Analog Reference Monitor
AS - Analog Monitor Identification
CA - Calibration A On/Off
CB - Calibration B On/Off
CT - Calibration Timer On/Off
DA - Data Crossing A
DB - Data Crossing B
EA - Electronics A On/Off
EB - Electronics B On/Off
EC - Electronics C On/Off
EF - Event Flag
EO - Earth Aspect On/Off
EV - Event Counter
FS - Fast-Slow Scan Rate
G1 - Visible Earth Gate 1
G2 - IR Earth Gate 2
G3 - Earth Gate 3
G4 - Earth Gate 4
G5 - Solar Gate 5
G6 - Star Gate 6
G7 - Earth Gate 7
G8 - Star Gate 8
G9 - Solar Gate 9
HA - High Voltage A On/Off
HB - High Voltage B On/Off
H1 - High Voltage Monitor A
H2 - High Voltage Monitor B

LG - Logic On/Off
L1 - Low Voltage Monitor A
L2 - Low Voltage Monitor B
MA - A Auto/Manual Select
MB - B Auto/Manual Select
MC - C Auto/Manual Select
ME - Memory Identification
MT - High-Low Motor Torque Setting
M1 - Normal-Optional Sampling Mode
M2 - Normal-Optional Sampling Mode
PTD1(R) - Programmable Time Delay 1 (Right Byte)
PTD1(L) - Programmable Time Delay 1 (Left Byte)
PTD2(R) - Programmable Time Delay 2 (Right Byte)
PTD2(L) - Programmable Time Delay 2 (Left Byte)
PTD3(R) - Programmable Time Delay 3 (Right Byte)
PTD3(L) - Programmable Time Delay 3 (Left Byte)
PTD4(R) - Programmable Time Delay 4 (Right Byte)
PTD4(L) - Programmable Time Delay 4 (Left Byte)
PTD5(R) - Programmable Time Delay 5 (Right Byte)
PTD5(L) - Programmable Time Delay 5 (Left Byte)
RA - A Range
RB - B Range
RC - C Range
RM - Ratemeter
RR - RC Register
SH - Shutter Position
SI - Stellar Lock Indicator
SO - Stellar Aspect On/Off
SS - Sector Identification
ST - State-Of-Health (SOH) Data
TA - Temperature Monitor A
TB - Temperature Monitor B
TC - Temperature Monitor C
TD - Temperature Monitor D

TBR1 - Time Between Register 1
TBR2 - Time Between Register 2
TBR3 - Time Between Register 3
TBR5 - Time Between Register 5
TH - Threshold Control
TM - Temperature Minco
VA - HVA1-2 Select
VB - HVB1-2 Select
WP - Wheel Position

Table B:2 Status Array, Exp #1

C++++++++++++++++++++++++++++++++NAR ARRAY++++++++++++++++++++++++++++++++

BIT NUMBER	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
C++++++++++																	1
C++++++++++																CA	2
C++++++++++								EA									3
C++++++++++																	4
C++++++++++								HA									5
C++++++++++																	6
C++++++++++																	7
C++++++++++																	8
C++++++++++																M1	9
C++++++++++																	10
C++++++++++																VA	11
C++++++++++																	12
C++++++++++																	13
C++++++++++																	14
C++++++++++																	15
C++++++++++																	16
C++++++++++																	17
C++++++++++					**	1A	**	**									18
C++++++++++					**	2A	**	**									19
C++++++++++																	20
C++++++++++									**	**	**	H1	**	**	**	**	21
C++++++++++																	22
C++++++++++									**	**	**	RM	**	**	**	**	23
C++++++++++																	24
C++++++++++																	25
C++++++++++																	26
C++++++++++																	27

Table B:3 Status Array, Exp #2

```
C++++++++++++++++++++++++++++++++NAR ARRAY++++++++++++++++++++++++++++++++

 BIT NUMBER // 0/ 1/ 2/ 3/ 4/ 5/ 6/ 7// 8/ 9/10/11/12/13/14/15//

C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  1
C++++++++++// /  /  /  /  /  /  /  /CB//  /  /  /  /  /  /  /CA//  2
C++++++++++// /  /  /  /  /  /  /  /EA//  /  /  /  /  /  /  /  //  3
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /EB//  4
C++++++++++// /  /  /  /  /  /  /  /HA//  /  /  /  /  /  /  /  //  5
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /HB//  6
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  7
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  8
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /M2/M1//  9
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //10
C++++++++++// /  /  /  /  /  /  /  /UB//  /  /  /  /  /  /  /UA//11
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //12
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //13
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //14
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //15
C++++++++++// /  /  /  /**/DB/**/**//  /  /  /  /**/DA/**/**//16
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //17
C++++++++++// /  /  /  /**/1A/**/**//  /  /  /  /  /  /  /  //18
C++++++++++// /  /  /  /**/2A/**/**//  /  /  /  /**/1B/**/**//19
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /**/2B/**/**//20
C++++++++++//**/**/**/H2/**/**/**/**/**/**/**/H1/**/**/**/**//21
C++++++++++//**/**/**/L2/**/**/**/**/**/**/**/L1/**/**/**/**//22
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //23
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //24
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //25
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //26
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //27
```

Table B:4 Status Array, Exp #3

NAR ARRAY

BIT NUMBER	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
																	1
																	2
								EA									3
																EB	4
								HA									5
																	6
																	7
																	8
																	9
																	10
																UA	11
																	12
																	13
																	14
																	15
																	16
																	17
					**	1A	**	**									18
					**	2A	**	**									19
																	20
									**	**	**	H1	**	**	**	**	21
																	22
																	23
																	24
																	25
																	26
																	27

Table B:5 Status Array, Exp #4

```
C**********NAR ARRAY**********

 BIT NUMBER // 0/ 1/ 2/ 3/ 4/ 5/ 6/ 7// 8/ 9/10/11/12/13/14/15//

C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /AB// 1
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /CA// 2
C**********//  /  /  /  /  /  /  /EA//  /  /  /  /  /  /  /  // 3
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  // 4
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  // 5
C**********//  /  /  /  /  /  /  /MA//  /  /  /  /  /  /  /  // 6
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  // 7
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  // 8
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  // 9
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //10
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //11
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /**/RA//12
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //13
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //14
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //15
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //16
C**********//  /  /  /  /**/RR/**/**//  /  /  /  /  /  /  /  //17
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //18
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //19
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //20
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //21
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //22
C**********/**/**/**/TA/**/**/**/**//  /  /  /  /  /  /  /  //23
C**********//  /  /  /  /  /  /  /  //**/**/**/TB/**/**/**/**//24
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //25
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //26
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //27
```

Table B:6 Status Array, Exp #5

NAR ARRAY

BIT NUMBER	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
															AB		1
															CA		2
							EA										3
																	4
																	5
							MA										6
																	7
																	8
																	9
																	10
																	11
						**	RB							**	RA		12
																	13
																	14
																	15
																	16
					**	RR	**	**									17
																	18
																	19
																	20
																	21
																	22
	**	**	**	TA	**	**	**	**									23
									**	**	**	TB	**	**	**	**	24
																	25
																	26
																	27

Table B:7 Status Array, Exp #6

```
C++++++++++++++++++++++++++++++++NAR ARRAY++++++++++++++++++++++++++++++++

 BIT NUMBER // 0/ 1/ 2/ 3/ 4/ 5/ 6/ 7// 8/ 9/10/11/12/13/14/15//

C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  1
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /CA//  2
C++++++++++// /  /  /  /  /  /  /EA//  /  /  /  /  /  /  /  //  3
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  4
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  5
C++++++++++// /  /  /  /  /  /  /MA//  /  /  /  /  /  /  /  //  6
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  7
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  8
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  9
C++++++++++// /  /  /  /  /  /  /SH//  /  /  /  /  /  /  /  //10
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //11
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /**/RA//12
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //13
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //14
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //15
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //16
C++++++++++// /  /  /  /**/RR/**/**//  /  /  /  /  /  /  /  //17
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //18
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //19
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //20
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //21
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //22
C++++++++++//**/**/**/TA/**/**/**/**//  /  /  /  /  /  /  /  //23
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //24
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //25
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //26
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //27
```

Table B:8 Status Array, Exp #7

```
C++++++++++++++++++++++++++++++++NAR ARRAY++++++++++++++++++++++++++++++++

 BIT NUMBER // 0/ 1/ 2/ 3/ 4/ 5/ 6/ 7// 8/ 9/10/11/12/13/14/15//

C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  1
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  /CA//  2
C++++++++++// /  /  /  /  /  /  /EA//  /  /  /  /  /  /  /  //  3
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  4
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  5
C++++++++++// /  /  /  /  /  /  /MA//  /  /  /  /  /  /  /  //  6
C++++++++++// /  /  /  /  /  /  /MC//  /  /  /  /  /  /  /MB//  7
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  8
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  9
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //10
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //11
C++++++++++// /  /  /  /  /  /**/RB//  /  /  /  /  /  /**/RA//12
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /**/RC//13
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //14
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //15
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //16
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //17
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //18
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //19
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //20
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //21
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //22
C++++++++++//**/**/**/TA/**/**/**/**//  /  /  /  /  /  /  /  //23
C++++++++++//**/**/**/TC/**/**/**/**/**/**/**/TB/**/**/**/**//24
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //25
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //26
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //27
```

Table B:9 Status Array, Exp #8

NAR ARRAY

BIT NUMBER	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
																AB	1
																CA	2
								EA									3
																	4
																	5
								MA									6
																	7
																	8
																	9
								SH									10
																SH	11
															**	RA	12
																	13
																	14
																	15
																	16
																	17
																	18
																	19
																	20
																	21
																	22
	**	**	**	TA	**	**	**	**									23
																	24
																	25
																	26
																	27

Table B:10 Status Array, Exp #9

NAR ARRAY

BIT NUMBER	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
																	1
																	2
								EA									3
																	4
																FS	5
																	6
																	7
								MT									8
																	9
																	10
																	11
																	12
																	13
						**	HU	**									14
																	15
																	16
																	17
																	18
																	19
																	20
									**	**	**	H1	**	**	**	**	21
									**	**	**	L1	**	**	**	**	22
	**	**	**	TA	**	**	**	**									23
																	24
																	25
																	26
																	27

Table B:11 Status Array, Exp #10

```
C++++++++++++++++++++++++++++++++NAR ARRAY++++++++++++++++++++++++++++++++

 BIT NUMBER // 0/ 1/ 2/ 3/ 4/ 5/ 6/ 7// 8/ 9/10/11/12/13/14/15//

C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  1
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /CA//  2
C++++++++++// /  /  /  /  /  /  /EA//  /  /  /  /  /  /  /  //  3
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  4
C++++++++++// /  /  /  /  /  /  /HA//  /  /  /  /  /  /  /  //  5
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /HB//  6
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  7
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  8
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  9
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //10
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //11
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //12
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //13
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //14
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //15
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //16
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //17
C++++++++++// /  /  /  /**/1A/**/**//  /  /  /  /  /  /  /  //18
C++++++++++// /  /  /  /**/2A/**/**//  /  /  /  /  /  /  /  //19
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //20
C++++++++++//**/**/**/H2/**/**/**/**//**/**/**/H1/**/**/**/**//21
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //22
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //23
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //24
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //25
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //26
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //27
```

Table B:12 Status Array, Exp #11

```
C++++++++++++++++++++++++++++++NAR ARRAY++++++++++++++++++++++++++++++

 BIT NUMBER // 0/ 1/ 2/ 3/ 4/ 5/ 6/ 7// 8/ 9/10/11/12/13/14/15//

C++++++++++// /  /  /  /  /  /  /  // /  /  /  /  /  /  /G7// 1
C++++++++++// /  /  /  /  /  /  /G8// /  /  /  /  /  /  /  // 2
C++++++++++// /  /  /  /  /  /  /EA// /  /  /  /  /  /  /G9// 3
C++++++++++// /  /  /  /  /  /  /  // /  /  /  /  /  /  /  // 4
C++++++++++// /  /  /  /  /  /  /HA// /  /  /  /  /  /  /  // 5
C++++++++++// /  /  /  /  /  /  /EO// /  /  /  /  /  /  /  // 6
C++++++++++// /  /  /  /  /  /  /SI// /  /  /  /  /  /  /  // 7
C++++++++++// /  /  /  /  /  /  /AC// /  /  /  /  /  /  /  // 8
C++++++++++// /  /  /  /  /  /  /A1// /  /  /  /  /  /  /  // 9
C++++++++++// /  /  /  /  /  /  /  // /  /  /  /  /  /  /  //10
C++++++++++// /  /  /  /  /  /  /  // /  /  /  /  /  /  /  //11
C++++++++++// /  /  /  /  /  /  /  // /  /  /  /  /  /  /  //12
C++++++++++// /  /  /  /**/**/**/**/**/TB/R1/**/**/**/**/**//13
C++++++++++// /  /  /  /  /  /  /  // /  /  /  /  /  /  /  //14
C++++++++++// /  /  /  /  /  /  /  // /  /  /  /  /  /  /  //15
C++++++++++// /  /  /  /  /  /  /  // /  /  /  /  /  /  /  //16
C++++++++++// /  /  /  /  /  /  /  // /  /  /  /  /  /  /  //17
C++++++++++// /  /  /  /**/1A/**/**// /  /  /  /  /  /  /  //18
C++++++++++// /  /  /  /  /  /  /  // /  /  /  /  /  /  /  //19
C++++++++++// /  /  /  /  /  /  /  // /  /  /  /  /  /  /  //20
C++++++++++// /  /  /  /  /  /  /  //**/**/**/H1/**/**/**/**//21
C++++++++++// /  /  /  /  /  /  /  // /  /  /  /  /  /  /  //22
C++++++++++// /  /  /  /  /  /  /  // /  /  /  /  /  /  /  //23
C++++++++++// /  /  /  /  /  /  /  // /  /  /  /  /  /  /  //24
C++++++++++//**/**/PT/D4/(L/)*/**/**// /  /  /  /  /  /  /  //25
C++++++++++//**/**/PT/D4/(R/)*/**/**// /  /  /  /  /  /  /  //26
C++++++++++//**/**/PT/D5/(L/)*/**/**//**/**/PT/D5/(R/)*/**/**//27
```

Table B:13 Status Array, Exp #12

MAR ARRAY

BIT NUMBER	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
																	1
																CA	2
								EA									3
																	4
																	5
								MA									6
																	7
																	8
																	9
																	10
																	11
															**	RA	12
																	13
																	14
																	15
																	16
				**	RR	**	**										17
																	18
																	19
																	20
																	21
																	22
	**	**	**	TA	**	**	**	**									23
																	24
																	25
																	26
																	27

Table B:14 Status Array, Exp #13

```
C**********NAR ARRAY**********

 BIT NUMBER // 0/ 1/ 2/ 3/ 4/ 5/ 6/ 7// 8/ 9/10/11/12/13/14/15//

C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  1
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /CA//  2
C**********//  /  /  /  /  /  /  /EA//  /  /  /  /  /  /  /  //  3
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  4
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  5
C**********//  /  /  /  /  /  /  /MA//  /  /  /  /  /  /  /  //  6
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  7
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  8
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  9
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //10
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //11
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /**/RA//12
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //13
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //14
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //15
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //16
C**********//  /  /  /  /**/RR/**/**//  /  /  /  /  /  /  /  //17
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //18
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //19
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //20
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //21
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //22
C**********/**/**/**/TA/**/**/**/**//  /  /  /  /  /  /  /  //23
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //24
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //25
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //26
C**********//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //27
```

Table B:15 Status Array, Exp #14

C**********NAR ARRAY**********

BIT NUMBER	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
C**********																	1
C**********																	2
C**********								EA									3
C**********																	4
C**********																	5
C**********																	6
C**********																	7
C**********																	8
C**********																	9
C**********																	10
C**********																	11
C**********																	12
C**********																	13
C**********																	14
C**********																	15
C**********																	16
C**********																	17
C**********																	18
C**********																	19
C**********																	20
C**********																	21
C**********																	22
C**********																	23
C**********																	24
C**********																	25
C**********																	26
C**********																	27

Table B:16 Status Array, Exp #15

```
C++++++++++++++++++++++++++++++++NAR ARRAY++++++++++++++++++++++++++++++++

 BIT NUMBER // 0/ 1/ 2/ 3/ 4/ 5/ 6/ 7// 8/ 9/10/11/12/13/14/15//

C++++++++++++/// / / / / / / / / // / / / / / / / /G7// 1
C++++++++++++/// / / / / / / /G8// / / / / / / / / // 2
C++++++++++++/// / / / / / / /EA// / / / / / / / /G9// 3
C++++++++++++/// / / / / / / / // / / / / / / / / // 4
C++++++++++++/// / / / / / / /HA// / / / / / / / /FS// 5
C++++++++++++/// / / / / / / /E0// / / / / / / / / // 6
C++++++++++++/// / / / / / / /SI// / / / / / / / /G3// 7
C++++++++++++/// / / / / / / /AC// / / / / / / / /G4// 8
C++++++++++++/// / / / / / / /A1// / / / / / / / /M1// 9
C++++++++++++/// / / / / / / / // / / / / / / / /G5//10
C++++++++++++/// / / / / / / /G6// / / / / / / / / //11
C++++++++++++/// / / / / / / /G2// / / / / / / / /G1//12
C++++++++++++/// / / / /**/**/**/**//**/TB/R1/**/**/**/**/**//13
C++++++++++++/// / / / /**/**/**/**//**/TB/R2/**/**/**/**/**//14
C++++++++++++/// / / / / / / / // / / / / / / / / //15
C++++++++++++/// / / / /**/**/**/**//**/TB/R3/**/**/**/**/**//16
C++++++++++++/// / / / /**/**/**/**//**/TB/R5/**/**/**/**/**//17
C++++++++++++/// / / / / / / / //**/**/PT/D1/(L/)*/**/**//18
C++++++++++++/// / / / / / / / //**/**/PT/D1/(R/)*/**/**//19
C++++++++++++///**/**/PT/D2/(L/)*/**/**//**/**/PT/D2/(R/)*/**/**//20
C++++++++++++/// / / / / / / / // / / / / / / / / //21
C++++++++++++///**/**/PT/D3/(L/)*/**/**// / / / / / / / / //22
C++++++++++++///**/**/**/TA/**/**/**/**//**/**/PT/D3/(R/)*/**/**//23
C++++++++++++///**/**/**/TC/**/**/**/**//**/**/**/TB/**/**/**/**//24
C++++++++++++///**/**/PT/D4/(L/)*/**/**//**/**/**/TD/**/**/**/**//25
C++++++++++++///**/**/PT/D4/(R/)*/**/**// / / / / / / / / //26
C++++++++++++///**/**/PT/D5/(L/)*/**/**//**/**/PT/D5/(R/)*/**/**//27
```

Table B:17 Status Array, Exp #16

```
C++++++++++++++++++++++++++++++++NAR ARRAY++++++++++++++++++++++++++++++++

 BIT NUMBER // 0/ 1/ 2/ 3/ 4/ 5/ 6/ 7// 8/ 9/10/11/12/13/14/15//

C++++++++++++// / / / / / / /BC// / / / / / / /G7// 1
C++++++++++++// / / / / / / /G8// / / / / / / / // 2
C++++++++++++// / / / / / / /EA// / / / / / / /G9// 3
C++++++++++++// / / / / / / / // / / / / / / / // 4
C++++++++++++// / / / / / / /HA// / / / / / / / // 5
C++++++++++++// / / / / / / /EO// / / / / / / / // 6
C++++++++++++// / / / / / / /SI// / / / / / / /G3// 7
C++++++++++++// / / / / / / /AC// / / / / / / /G4// 8
C++++++++++++// / / / / / / /A1// / / / / / / / // 9
C++++++++++++// / / / / / / / // / / / / / / /G5//10
C++++++++++++// / / / / / / /G6// / / / / / / /VA//11
C++++++++++++// / / / / / / /G2// / / / / / / /G1//12
C++++++++++++// / / / /**/**/**/**/**/TB/R1/**/**/**/**/**//13
C++++++++++++// / / / /**/**/**/**/**/TB/R2/**/**/**/**/**//14
C++++++++++++// / / / / / / / / // / / / / /**/SS/**//15
C++++++++++++// / / / /**/**/**/**/**/TB/R3/**/**/**/**/**//16
C++++++++++++// / / / /**/**/**/**/**/TB/R5/**/**/**/**/**//17
C++++++++++++// / / / / / / / //**/**/PT/D1/(L/)*/**/**//18
C++++++++++++// / / / / / / / //**/**/PT/D1/(R/)*/**/**//19
C++++++++++++/**/**/PT/D2/(L/)*/**/**/**/**/PT/D2/(R/)*/**/**//20
C++++++++++++// / / / / / / / // / / / / / / / // / / / //21
C++++++++++++/**/**/PT/D3/(L/)*/**/**// / / / / / / / //22
C++++++++++++/**/**/**/TA/**/**/**/**/**/**/PT/D3/(R/)*/**/**//23
C++++++++++++// / / / / / / / //**/**/**/TB/**/**/**/**//24
C++++++++++++/**/**/PT/D4/(L/)*/**/**// / / / / / / / //25
C++++++++++++/**/**/PT/D4/(R/)*/**/**// / / / / / / / //26
C++++++++++++/**/**/PT/D5/(L/)*/**/**/**/**/PT/D5/(R/)*/**/**//27
```

Table B:18 Status Array, Exp #17

```
C++++++++++++++++++++++++++++++++NAR ARRAY++++++++++++++++++++++++++++++++

 BIT NUMBER // 0/ 1/ 2/ 3/ 4/ 5/ 6/ 7// 8/ 9/10/11/12/13/14/15//

C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  1
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  2
C++++++++++// /  /  /  /  /  /  /EA//  /  /  /  /  /  /  /  //  3
C++++++++++// /  /  /  /  /  /  /EC//  /  /  /  /  /  /  /EB//  4
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  5
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  6
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  7
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  8
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  9
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //10
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //11
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //12
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //13
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //14
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //15
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //16
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //17
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //18
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //19
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //20
C++++++++++// /  /  /  /  /  /  /  //**/**/**/H1/**/**/**/**//21
C++++++++++// /  /  /  /  /  /  /  //**/**/**/L1/**/**/**/**//22
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //23
C++++++++++//**/**/**/TC/**/**/**/**//  /  /  /  /  /  /  /  //24
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //25
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //26
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //27
```

Table B:19 Status Array, Exp #18

```
++++++++++++++++++++++++++++++++NAR ARRAY++++++++++++++++++++++++++++++++

BIT NUMBER// 0/ 1/ 2/ 3/ 4/ 5/ 6/ 7// 8/ 9/10/11/12/13/14/15//

(+++++++++++//  /  /  /  /  /  /  /  /  //  /  /  /  /  /  /G7//  1
(+++++++++++//  /  /  /  /  /  /  /G8//  /  /  /  /  /  /  /  //  2
(+++++++++++//  /  /  /  /  /  /  /EH//  /  /  /  /  /  /  /G9//  3
(+++++++++++//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  4
(+++++++++++//  /  /  /  /  /  /  /HA//  /  /  /  /  /  /  /  //  5
(+++++++++++//  /  /  /  /  /  /  /E0//  /  /  /  /  /  /  /  //  6
(+++++++++++//  /  /  /  /  /  /  /S1//  /  /  /  /  /  /  /  //  7
(+++++++++++//  /  /  /  /  /  /  /AC//  /  /  /  /  /  /  /  //  8
(+++++++++++//  /  /  /  /  /  /  /A1//  /  /  /  /  /  /  /  //  9
(+++++++++++//  /  /  /  /  /  /  /SH//  /  /  /  /  /  /  /  //10
(+++++++++++//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /VA//11
(+++++++++++//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //12
(+++++++++++//  /  /  /  /14/**/**/**//**/TB/R1/**/**/**/**/**//13
(+++++++++++//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //14
(+++++++++++//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //15
(+++++++++++//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //16
(+++++++++++//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //17
(+++++++++++//  /  /  /  /**/1A/**/**//  /  /  /  /  /  /  /  //18
(+++++++++++//  /  /  /  /**/2A/**/**//  /  /  /  /  /  /  /  //19
(+++++++++++//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //20
(+++++++++++//  /  /  /  /  /  /  /  //**/**/**/H1/**/**/**/**//21
(+++++++++++//  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //22
(+++++++++++//**/**/**/TA/**/**/**/**//  /  /  /  /  /  /  /  //23
(+++++++++++//  /  /  /  /  /  /  /  //**/**/**/TB/**/**/**/**//24
(+++++++++++//**/**/PT/D4/(L/)*/**/**//  /  /  /  /  /  /  /  //25
(+++++++++++//**/**/PT/D4/(R/)*/**/**//**/**/**/WP/**/**/**/**//26
(+++++++++++//**/**/PT/D5/(L/)*/**/**//**/**/PT/D5/(R/)*/**/**//27
```

Table B:20 Status Array, Exp #20

```
C++++++++++++++++++++++++++++++++NAR ARRAY++++++++++++++++++++++++++++++++

 BIT NUMBER // 0/ 1/ 2/ 3/ 4/ 5/ 6/ 7// 8/ 9/10/11/12/13/14/15//

C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  1
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  2
C++++++++++// /  /  /  /  /  /  /EA//  /  /  /  /  /  /  /  //  3
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  4
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  5
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  6
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  7
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  8
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  9
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //10
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //11
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //12
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //13
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /**/CH/**//14
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //15
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //16
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //17
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //18
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //19
C++++++++++// /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //20
C++++++++++// /**/**/**/AD/**/**/**/**//**/**/**/AD/**/**/**/**//21
C++++++++++// /**/**/**/AD/**/**/**/**//**/**/**/AD/**/**/**/**//22
C++++++++++// /**/**/**/AD/**/**/**/**//**/**/**/AD/**/**/**/**//23
C++++++++++// /**/**/**/AD/**/**/**/**//**/**/**/AD/**/**/**/**//24
C++++++++++// /**/**/**/AD/**/**/**/**//**/**/**/AD/**/**/**/**//25
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //26
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //27
```

Table B:21 Status Array, Exp #21

MAR ARRAY

BIT NUMBER	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
																	1
																	2
								EA									3
																	4
																	5
																	6
																	7
																	8
																	9
																	10
																	11
																	12
																	13
																	14
					**	AS	**	**									15
																	16
																	17
																	18
																	19
	**	**	**	AD	**	**	**	**									20
																	21
																	22
																	23
																	24
																	25
																	26
																	27

Table B:22 Status Array, Exp #22

```
C************************NAR ARRAY******************************

 BIT NUMBER //  0/  1/  2/  3/  4/  5/  6/  7//  8/  9/10/11/12/13/14/15//

C***********//  /   /   /   /   /   /   /   //   /   /   /   /   /   /  /G7// 1
C***********//  /   /   /   /   /   /  /G8//   /   /   /   /   /   /   /  // 2
C***********//  /   /   /   /   /   /  /EA//   /   /   /   /   /   /  /G9// 3
C***********//  /   /   /   /   /   /   /   //   /   /   /   /   /   /   /  // 4
C***********//  /   /   /   /   /   /  /HA//   /   /   /   /   /   /   /  // 5
C***********//  /   /   /   /   /   /  /EO//   /   /   /   /   /   /   /  // 6
C***********//  /   /   /   /   /   /  /SI//   /   /   /   /   /   /   /  // 7
C***********//  /   /   /   /   /   /  /AC//   /   /   /   /   /   /   /  // 8
C***********//  /   /   /   /   /   /  /A1//   /   /   /   /   /   /   /  // 9
C***********//  /   /   /   /   /   /   /   //   /   /   /   /   /   /   /  //10
C***********//  /   /   /   /   /   /   /   //   /   /   /   /   /   /   /  //11
C***********//  /   /   /   /   /   /   /   //   /   /   /   /   /   /   /  //12
C***********//  /   /   /  /**/**/**/**//**/TB/R1/**/**/**/**/**//13
C***********//  /   /   /   /   /   /   /   //   /   /   /   /   /   /   /  //14
C***********//  /   /   /   /   /   /   /   //   /   /   /   /   /   /   /  //15
C***********//  /   /   /   /   /   /   /   //   /   /   /   /   /   /   /  //16
C***********//  /   /   /   /   /   /   /   //   /   /   /   /   /   /   /  //17
C***********//  /   /   /   /   /   /   /   //   /   /   /   /   /   /   /  //18
C***********//  /   /   /   /   /   /   /   //   /   /   /   /   /   /   /  //19
C***********//  /   /   /   /   /   /   /   //   /   /   /   /   /   /   /  //20
C***********//  /   /   /   /   /   /   /  //**/**/**/H1/**/**/**/**//21
C***********//  /   /   /   /   /   /   /  //**/**/**/L1/**/**/**/**//22
C***********///**/**/**/TA/**/**/**/**//   /   /   /   /   /   /   /  //23
C***********//  /   /   /   /   /   /   /   //   /   /   /   /   /   /   /  //24
C***********///**/**/PT/D4/(L/)*/**/**//   /   /   /   /   /   /   /  //25
C***********///**/**/PT/D4/(R/)*/**/**//   /   /   /   /   /   /   /  //26
C***********///**/**/PT/D5/(L/)*/**/**///**/**/PT/D5/(R/)*/**/**//27
```

Table B:23 Status Array, Exp #24

```
C++++++++++++++++++++++++++++++NAR ARRAY++++++++++++++++++++++++++++++

 BIT NUMBER // 0/ 1/ 2/ 3/ 4/ 5/ 6/ 7// 8/ 9/10/11/12/13/14/15//

C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  1
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /CA//  2
C++++++++++// /  /  /  /  /  /  /  /EA//  /  /  /  /  /  /  /CT//  3
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  4
C++++++++++// /  /  /  /  /  /  /  /HA//  /  /  /  /  /  /  /  //  5
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  6
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  7
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /ME//  8
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //  9
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //10
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //11
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //12
C++++++++++// /  /  /  /  /  /  /**/WP//  /  /  /  /  /  /  /  //13
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //14
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //15
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //16
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //17
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //18
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //19
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //20
C++++++++++// /  /  /  /  /  /  /  /  //**/**/**/H1/**/**/**/**//21
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //22
C++++++++++//**/**/**/TA/**/**/**/**//**/**/**/RM/**/**/**/**//23
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //24
C++++++++++//**/**/**/TM/**/**/**/**//  /  /  /  /  /  /  /  //25
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //26
C++++++++++// /  /  /  /  /  /  /  /  //  /  /  /  /  /  /  /  //27
```

Table B:24 Status Array, Exp #25

```
BIT NUMBER  0  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15
                                                          1
                                                          2
                                   EA                  LG  3
                                   EF                  AB  4
                                                          5
                                                          6
                                                          7
                                                          8
                                                          9
                                                         10
                                                         11
                                                         12
                                                         13
                                                         14
                                                         15
                                                         16
                                                EU ** ** 17
                  1A ** **                      TH ** ** 18
                                                1B ** ** 19
                                                         20
                                                         21
                                                         22
                                                         23
                                                         24
                                                         25
                                                         26
 ** ** ** ** ** ST ** ** ** ** ** ** ** ** ** ** ** **  27
```

APPENDIX C: DATA DISPLAY SUMMARY

This appendix contains a complete set of status, listing and describe outputs. It contains graphical output for experiments 4,5,6,12 and 13 only.

APPENDIX C DATA DISPLAYS

1. Sample Status Outputs

The status outputs contain in a plain language format the status indicators for the experiments specified by the header. The date/time group in the extreme upper left hand corner indicates the time at which the operator made the request for the data. The date/time group in the heading is the start time of the two minute telemetry page requested. The header also contains the satellite (A or B) and the experiment number and title. The telemetry format (1-5) and the telemetry page number (0-31) are indicated just below and to the left of the header. All data in the output are the last available in the particular telemetry page requested. "Most recent" sensor data is in counts. Any idiosyncrasies of the status displays will be noted with that display in the following sections. Unless otherwise noted the number of telemetry pages per output is 1.

```
12 876/18:30:23

          SOLRAD 11B EXP STATUS FOR 76111A/ 4:45: 7
           EXPERIMENT 1: HIGH ENERGY X-RAY MONITOR

FORMAT: 1   PAGE:  2


     ELECTRONICS:     ON                  RATEMETER: 1.26 VOLTS
     HIGH VOLTAGE:    ON
     HV SELECT:        1
     MODE:          NORM                  MOST RECENT FPA DATA
     CALIBRATION:     OFF                 CHANNEL 1:        27.
     HV1 SETTING:   0111                  CHANNEL 2:        35.
     HV2 SETTING:   1011                  CHANNEL 3:        89.
     HV MONITOR:    2.78 VOLTS            CHANNEL 4:       119.
```

Table C1.1 - Sample status output for experiment 1. HVx settings are given in terms of the binary switch positions.

```
12 676/18:30:53

              SOLRAD 11B EXP STATUS FOR 761110/ 4:45: 7
              EXPERIMENT 2: X-RAY PROPORTIONAL COUNTER

FORMAT: 1   PAGE:  2


                    SIDE A          SIDE B
  ELECTRONICS:        ON              ON              MODE:  NORM
  HIGH VOLTAGE:       ON              ON
  HV SELECT:           1               2
  CALIBRATE:         OFF             OFF
  LV MONITOR:     3.48 VOLTS      3.70 VOLTS      MOST RECENT FPA DATA
  HV MONITOR:     3.70 VOLTS      2.50 VOLTS        FPA 1:        204.
  HV1 SETTING:    1001            1100              FPA 2:       1369.
  HV2 SETTING:    1001            1100              FPA 3:        311.
  DATA XING:      0010            0010              FPA 4:       1753.
```

Table C1.2 - Sample status output for experiment 2. The HVx settings are given in terms of the binary switch positions.

```
12 876/18:31:23

          SOLRAD 11B EXP STATUS FOR /81110/ 4:45: 7
           EXPERIMENT 3: MAGNESIUM XI, XII MONITOR

FORMAT: 1   PAGE:  2

    ELECTRONICS:          ON                    MOST RECENT DATA
    HIGH VOLTAGE:         ON                CONTINUUM:     117
    HV SELECT:             1                MAG11:         146
    HV1 SETTING:        1010                MAG12:         150
    HV2 SETTING:        1010
    HV MONITOR:         3.40 VOLTS
    STAR PULSES/MIN.:     16
```

Table C1.3 - Sample status output for experiment 3. The HVx settings are given in terms of the binary switch positions.

```
12 876/18:31:59

          SOLRAD 11B EXP STATUS FOR 7611Ø/ 4:45: 7
          EXPERIMENTS 4,5,6,12,13: X-RAY PHOTOMETERS

FORMAT: 1   PAGE:  2

ELECTRONICS:          ON        TEMP (DEG.C)     MOST RECENT DATA
CALIBRATE:           OFF        X4A    53.2Ø       X4      1
X4 A/B SELECT:         B        X4B    45.8Ø       X5     22
X4 RNGCHG:   (AUTO)    1        X5A    45.8Ø       X6     49
X5 A/B SELECT:         B        X5B    45.2Ø       X12   143
X5 RNGCHG:   (AUTO)    2        X6     45.8Ø       X13   153
X5 SHUTTER:    COVERED          X12    43.9Ø
X6 RNGCHG:   (AUTO)    2        X13    45.6Ø
X12 RNGCHG:  (AUTO)    1
X13 RNGCHG:  (AUTO)    1        RC REG ØØØØ
```

Table C1.4 - Sample status output for experiments 4,5,6, 12 and 13.

12 876/18:32:44

SOLRAD 11B EXP STATUS FOR 761110/ 4:45: 7
EXPERIMENTS 7,8 - UV ION CHAMBERS (170-1050A, 1080-1350A)

FORMAT: 1 PAGE: 2

		TEMP (DEG.C)		MOST RECENT DATA	
ELECTRONICS:	ON	X7A	41.71	X7A	1488
CALIBRATE:	OFF	X7B	43.98	X7B	3978
X7A RNGCHG: (AUTO)	3	X7C	45.20	X7C	2448
X7B RNGCHG: (AUTO)	2	X8	49.00	X8	13
X7C RNGCHG: (AUTO)	2				
X8 RNGCHG: (AUTO)	1				
X8A SHUTTER:	COVERED(OK)	KC REG	0000		
X8 A/B SELECT:	B				

Table C1.5 - Sample status output for experiments 7 and 8.

```
12177b/16:40:36

          SOLRAD 11A EXP STATUS FOR 7612 9/ 1:32: 4
               EXPERIMENT 9: UV SPECTROMETER

FORMAT: 2   PAGE: 20

   EXPERIMENT:      ON                 CONTROL WORD: 111111000001
   SCAN RATE:     FAST                 MOTOR COUNT:              4
   TORQUE:        HIGH                 EPA DATA:             24.
   HV SETTING:    0000
   HV MONITOR:    2.62 VOLTS
   LV MONITOR:    5.08 VOLTS           THE NEXT CONTROL WORD WILL
   TEMP:       -99.99 DEG.C            OCCUR IN PAGE 27
```

Table C1.6 - Sample status output for experiment 9. The HV setting is given as binary switch positions. The control word is output as a binary code. Currently this experiment yields valid data only when it is operating in the HIGH torque mode. In the slow scan mode, the number of telemetry pages per output is 7. In the fast scan mode, the number of telemetry pages per output is 1. All data (except the motor count) are taken from the page where the control word is found. If no control word is found, the data are taken from the page corresponding to the start time designated by the operator. In the slow scan mode the motor count is found six pages later than the page containing the control word.

```
12147b/16:15: 1
          SOLRAD 11B EXP STATUS FOR 7e1Ø 77 9:59:29

FORMAT: 1   PAGE: 12

      EXPERIMENT 1Ø                    EXPERIMENT 11
THOMSON X-RAY POLARIMETER        BRAGG X-RAY POLARIMETER
ELECTRONICS:        ON           ELECTRONICS:        ON
CALIBRATE:         OFF           HIGH VOLTAGE:       ON
HIGH VOLTAGE-A:     ON           HV SETTING:       1Ø1Ø
HIGH VOLTAGE-B:     ON           HV MONITOR:       4.5e VOLTS
HVA SETTING:      Ø1Ø1
HVB SETTING:      Ø1Ø1           SAMPLE PERIOD:  12.66 SEC
HVA MONITOR:      3.3e VOLTS
HVB MONITOR:      3.3Ø VOLTS
                                     MOST RECENT DATA
SAMPLE PERIOD:   5.62 SEC        SECTOR 1 FPA:        54.
                                 SECTOR 2 FPA:        37.
    MOST RECENT DATA             SECTOR 3 FPA:        56.
BKGD/ANTICOIN:        Ø.         SECTOR 4 FPA:        99.
   1A5 FPA:           1.         SECTOR 5 FPA:        42.
   1B5 FPA:          1Ø.         SECTOR 6 FPA:        78.
   2A5 FPA:           3.         SECTOR 7 FPA:         Ø.
   2B5 FPA:           Ø.         SECTOR B FPA:       125.

  *******STAR PULSE********      *******SECTOR STATUS********
  EARTH GATE 7      OPEN         EARTH ASPECT          ON
  EARTH DELAY 4     Ø.9 DEG      STELLAR ASPECT OFF /UNLOCKED
  STAR GATE 6       SHUT         ACS                   ON
  SOLAR GATE 9      SHUT         ACS ANGLE SENSOR     FINE
  SOLAR DELAY 5     Ø.4 DEG      SPIN PERIOD       3.B379 SEC
                                 ASPECT ANGLE         Ø.Ø DEG
```

Table C1.7 - Sample status output for experiments 10 and 11. High voltage settings are given in terms of binary switch positions. The most recent data in experiment 10 is from sector 5.

```
12 87b/18:33:59

          SOLRAD 11b EXP STATUS FOR 7b1110/ 4:45: 7
       EXPERIMENTS 14,23: SOLAR AND ANTISOLAR PROTONS
           EXPERIMENT 17: OMNIDIRECTIONAL PROTONS
            EXPERIMENT 22: SOLAR FLARE ELECTRONS

FORMAT: 1   PAGE:  2


    EXP 14,23    ON          EXP 17C TEMP          4b.34 DEG.C
    EXP 17A      ON          EXP 17C HV MONITOR     2.40 VOLTS
    EXP 17C      ON          EXP 17C LV MONITOR     2.94 VOLTS
    EXP 17D      ON          EXP 22 TEMP           53.24 DEG.C
    EXP 22       ON          EXP 22 HV MONITOR      1.96 VOLTS
                             EXP 22 LV MONITOR      2.58 VOLTS

  *******STAR PULSE*********      *******SECTOR STATUS********
  EARTH GATE 7      OPEN         EARTH ASPECT           ON
  EARTH DELAY 4      0.9 DEG     STELLAR ASPECT OFF /  LOCKED
  STAR GATE 8       SHUT         ACS                    ON
  SOLAR GATE 9      SHUT         ACS ANGLE SENSOR     FINE
  SOLAR DELAY 5      0.0 DEG     SPIN PERIOD        3.8428 SEC
                                 ASPECT ANGLE           0.0 DEG
```

Table C1.8 - Sample status output for experiments 14,17,22 and 23.

```
12 076/18:36:20

            SOLRAD 11B EXP STATUS FOR 761110/ 4:45: 7
                  EXPERIMENT 15: SOLAR WIND

FORMAT: 1   PAGE:  2
   ELECTRONICS:          ON
   HIGH VOLTAGE:         ON              TEMC          42.28 DEG.C
   RATE:               SLOW              TPMOD         51.04 DEG.C
   MODE:               NORM              TLOG          54.32 DEG.C
   FSP-STAR PULSE    0.9521 SEC          TPMC          53.20 DEG.C
   FSP-EARTH PULSE   0.9424 SEC          X-ASPECT        0.0 DEG
   FSP-SOLAR PULSE   0.9302 SEC          Y-ASPECT        0.0 DEG
                   ********SECTOR STATUS********
                   EARTH ASPECT                ON
                   STELLAR ASPECT OFF /  LOCKED
                   ACS                         ON
                   ACS ANGLE SENSOR          FINE
                   SPIN PERIOD            3.8428 SEC
                   ASPECT ANGLE             0.00 DEG
 ********STAR PULSE********              ********EARTH PULSE********
 EARTH GATE 7     OPEN                  EARTH DELAY 1      214.1 DEG
 EARTH DELAY 4     0.9 DEG              EARTH GATE 3         SHUT
 STAR GATE 8      SHUT                  EARTH GATE 4         SHUT
 SOLAR GATE 9     SHUT                  SOLAR GATE 5         OPEN
 SOLAR DELAY 5     0.0 DEG              SOLAR DELAY 2         0.9 DEG
                                        STAR GATE 6          SHUT
                                        STAR DELAY 3          0.0 DEG
                                        VIS EARTH GATE 1     SHUT
                                        IR EARTH GATE 2      SHUT
```

Table C1.9 - Sample status output for experiment 15.
This experiment has a fast and a slow sampling rate. The fast rate produces 10 times as much data per telemetry page as the slow rate and it is used only in format 3. The experiment also has a normal mode and a flux mode. Data channels are partitioned differently in the flux mode than in the normal mode. The X- and Y- aspect data currently lack the proper algorithm and are set to 0.

```
12 87b/18:3b:53

            SOLRAD 11B EXP STATUS FOR 761110/ 4:45: 7
              EXPERIMENT 16: STELLAR/AURORAL X-RAYS
FORMAT: 1   PAGE:  2
       ELECTRONICS            ON              ACCUM 1       270
       HIGH VOLTAGE-A         ON              ACCUM 2       307
       TEMP 1              33.56 DEG.C        ACCUM 3       303
       TEMP 2              34.52 DEG.C        ACCUM 4       329
       SLEW                   2               ACCUM 5       337
       COINC DATA          30977.             ACCUM 6       447
       SAMPLE PERIOD       1.5820 SEC         ACCUM 7       327
                                              ACCUM 8       322
                                              ACCUM 9       694
                    *******SECTOR STATUS********
                    EARTH ASPECT                 ON
                    STELLAR ASPECT OFF /  LOCKED
                    ACS                          ON
                    ACS ANGLE SENSOR           FINE
                    SPIN PERIOD           3.8429 SEC
                    ASPECT ANGLE            0.00 DEG
*******STAR PULSE********          ********EARTH PULSE********
EARTH GATE 7     OPEN              EARTH DELAY 1      214.1 DEG
EARTH DELAY 4     0.9 DEG          EARTH GATE 3        SHUT
STAR GATE 8      SHUT              EARTH GATE 4        SHUT
SOLAR GATE 9     SHUT              SOLAR GATE 5        OPEN
SOLAR DELAY 5     0.0 DEG          SOLAR DELAY 2        0.9 DEG
                                   STAR GATE 6         SHUT
                                   STAR DELAY 3         0.0 DEG
                                   VIS EARTH GATE 1    SHUT
                                   IR EARTH GATE 2     SHUT
```

Table C1.10 - Sample status output for experiment 16.

```
12107b/16:36:46

        SOLRAD 11B EXP STATUS FOR 7b1215/ 7:44:51
    EXPERIMENTS 18,19: GEOCORONAL,EXTRATERRESTRIAL EUV

FORMAT: 1   PAGE:  5

   ELECTRONICS:     OFF
   HIGH VOLTAGE:    OFF                 WHEEL POSITION: 1.88 VOLTS
   TEMP 1:        34.04 DEG.C           HV1 SET:          0011
   TEMP 2:        40.61 DEG.C           HV2 SET:          0000
   HV SELECT:          1                EXP 18 FILTER:
   HV MONITOR:     0.70 VOLTS           EXP 19 FILTER:

   *******STAR PULSE*********           *******SECTOR STATUS********
   EARTH GATE 7      OPEN               EARTH ASPECT          ON
   EARTH DELAY 4      0.9 DEG           STELLAR ASPECT OFF /UNLOCKED
   STAR GATE 8       SHUT               ACS                   ON
   SOLAR GATE 9      SHUT               ACS ANGLE SENSOR    FINE
   SOLAR DELAY 5      0.4 DEG           SPIN PERIOD      3.7427 SEC
                                        ASPECT ANGLE        0.0 DEG

NO DATA AVAILABLE
```

Table C1.11 - Sample status output for experiments 18 and 19.

These experiments output data from sensors in telemetry format 2 only. If another format is in effect, the status output shows a "NO DATA AVAILABLE" note. High voltage settings are in terms of the binary switch positions. The filter indicators do not yet have a designated output.

12 076/18:36:18

SOLRAD 11B EXP STATUS FOR 761110/ 4:45: 7
EXPERIMENT 20: PROTON-ALPHA TELESCOPE

FORMAT: 1 PAGE: 2

ELECTRONICS:	ON	28V REF:	4.00 VOLTS
5V REF:	4.98 VOLTS	15V REF:	3.02 VOLTS
2.5V REF:	2.48 VOLTS	10V REF:	2.04 VOLTS
0V REF:	0.00 VOLTS	-5V REF:	1.00 VOLTS
BIAS:	2.76 VOLTS		
ELEC TEMP:	5.10 VOLTS		
DET TEMP:	4.76 VOLTS		

THRESHOLD LEVELS

	CHAN 1	CHAN 2	CHAN 3	CHAN 4	CHAN 5	CHAN 6	CHAN 7	CHAN 0
20%LL	11	6	4	113	72	42	29	16
20%UL	16	11	6	186	113	72	47	28
75%LL	17	9	5	32	113	66	8	28
75%UL	37	16	9	113	241	150	27	60

Table C1.12 - - Sample status output for experiment 20.

```
12 076/18:56:14

          SOLRAD 11B EXP STATUS FOR 761110/ 3:29: 7
       EXPERIMENT 21: LOW ENERGY PROTON SPECTROMETER

FORMAT: 1    PAGE: 26

     ELECTRONICS:    ON

                ANALOG MONITOR STATUS: VOLTS
                                  7          3.76
                                  6          3.02
                                  5          3.92
                                  4          0.00
                                  3          2.18
                                  2          0.54
                                  1          5.10
                                  1          5.10

     ANALOG MONITOR 0 = 0.00 FOR THE PREVIOUS  64 MIN
     ANALOG MONITOR 4 = 0.00 FOR THE PREVIOUS  64 MIN
```

Table C1.13 - Sample status output for experiment 21.

Since one cycle through eight analog monitors is required, the number of telemetry pages per record is 8. The program searches backward through four such records to check for times when analog monitors 0 or 4 are not zero.

12.87c/18:4w:5?

SOLRAD 11B EXP STATUS FOR 761110/ 4:45: 7
EXPERIMENT 24: BACKGROUND X-RAY SPECTROMETER

FORMAT: 1 PAGE: 2

ELECTRONICS:	OFF	RATEMETER:	2.?? VOLTS
HV STATUS:	OFF	CAL TIMER:	OFF
TEMP 1:	-156.67 DEG.C	MEM ID:	1
TEMP 2:	41.14 DEG.C	SHUTTER:	COVERED
CALIBRATE:	OFF		
HV MONITOR:	0.?2 VOLTS		

Table C1. 14 - Sample status output for experiment 24.

This experiment is not working but the output is included for the sake of completeness.

```
12337b/19: 4: 9

                SOLRAD 11B EXP STATUS FOR 76 327/2M: 1:2M
                EXPERIMENT 25: GAMMA RAY BURST DETECTION

FORMAT: 1    PAGE: 25

      DETECTORS:      ON
      LOGIC:          ON          THRESHOLD SET:          1111
      HVA STATUS:     ON          SOH A:                  2953.
      HVB STATUS:     ON          SOH B:                  2937.
      HVA SET:        1001        SOH SEL:                1-4
      HVB SET:        1101        DATA SEL:               1-4
      EVENT ID:       0           AMT SEG:                12

NO DATA AVAILABLE
```

Table C1.15 - Sample status output for experiment 25. HVx and threshold settings are in terms of binary switch positions.

2. Sample Data Listings

The data listings contain a partial output in counts of the primary sensors for the experiment specified by the header. The data selected for display is that corresponding to the highest periodic sampling rate and always comprises at least 75% of the available data. The date/time group in the extreme upper left hand corner indicates the time at which the operator requested the particular data segment. The date/time group in the heading states the start and end times of the data displayed in the output. The header also indicates the satellite (A or B) and the experiment number and title. The elemetry format (1-5) and the telemetry page number (0-31) are indicated just below and to the left of the header. The time is indicated in the left most column with a resolution Δt, where Δt is the telemetry repetition interval for that sample. The maximum discrepancey between time tag and time of the data is $\Delta t/2$. Any idiosyncrasies in the data listings will be noted with that display in the appendix. Unless otherwise noted, the number of telemetry pages per output is 1.

e DEC 76/18:30:36

SOLRAD 11B DATA REPORT FOR 76111Ø/ 4:45: 7 TO 1Ø/ 4:46:59
EXPERIMENT 1: HIGH ENERGY X-RAY MONITOR

FORMAT: 1 PAGE: 2 NORMAL MODE

DATE/TIME	CAL	CHANNEL 1	CHANNEL 2	CHANNEL 3	CHANNEL 4	RATEMETER
76111Ø/ 445 7		3.2ØØ+1	3.3Ø0+1	6.8ØØ+1	1.21Ø+2	
76111Ø/ 44514		2.5ØØ+1	2.9Ø0+1	7.1Ø0+1	1.46Ø+2	
76111Ø/ 44522		2.3ØØ+1	4.1Ø0+1	7.3Ø0+1	1.18Ø+2	
76111Ø/ 44529		2.5ØØ+1	2.2Ø0+1	9.5Ø0+1	1.31Ø+2	
76111Ø/ 44537		2.6ØØ+1	2.9Ø0+1	9.7Ø0+1	1.57Ø+2	
76111Ø/ 44544		1.9ØØ+1	3.1Ø0+1	6.4Ø0+1	1.19Ø+2	51
76111Ø/ 44552		2.2ØØ+1	3.7Ø0+1	7.8Ø0+1	1.38Ø+2	
76111Ø/ 44559		1.6ØØ+1	3.0Ø0+1	6.2Ø0+1	1.22Ø+2	
76111Ø/ 446 7		2.2ØØ+1	2.6Ø0+1	8.3Ø0+1	1.49Ø+2	
76111Ø/ 44614		2.4ØØ+1	3.9Ø0+1	6.7Ø0+1	1.41Ø+2	
76111Ø/ 44622		2.5ØØ+1	2.4Ø0+1	6.6Ø0+1	1.3Ø0+2	
76111Ø/ 44629		2.ØØØ+1	2.9Ø0+1	8.4Ø0+1	1.15Ø+2	
76111Ø/ 44637		2.6ØØ+1	4.2Ø0+1	6.6Ø0+1	1.Ø9Ø+2	
76111Ø/ 44644		2.ØØØ+1	2.9Ø0+1	6.9Ø0+1	1.25Ø+2	63
76111Ø/ 44652		2.5ØØ+1	3.9Ø0+1	6.6Ø0+1	1.35Ø+2	
76111Ø/ 44659		2.7ØØ+1	3.5Ø0+1	6.9Ø0+1	1.19Ø+2	

Table C2.1 - Sample data listing for experiment 1. Data column headings will change, depending on the experiment mode (i.e., normal or optional). In the optional mode, channels 1, 3 and 4 are omitted while channel #2 is output four times more frequently than in the normal mode.

```
6 DEC 76/16:31: 7

  SOLRAD 11B DATA REPORT FOR 761110/ 4:45: 7 TO 10/ 4:46:59
          EXPERIMENT 2: X-RAY PROPORTIONAL COUNTER

FORMAT:   1      PAGE:   2                              NORMAL MODE

   DATE/TIME     CAL    CHANNEL 1   CHANNEL 2   CHANNEL 3   CHANNEL 4
761110/ 445 7          2.080+2     1.297+3     3.230+2     1.777+3
761110/ 44514          1.990+2     1.201+3     3.010+2     1.725+3
761110/ 44529          2.200+2     1.281+3     3.290+2     1.677+3
761110/ 44529          2.170+2     1.229+3     3.050+2     1.753+3
761110/ 44537          1.890+2     1.281+3     3.010+2     1.709+3
761110/ 44544          2.080+2     1.305+3     3.130+2     1.725+3
761110/ 44552          2.070+2     1.253+3     2.630+2     1.749+3
761110/ 44559          2.120+2     1.317+3     3.070+2     1.765+3
761110/ 445 7          2.010+2     1.273+3     3.150+2     1.661+3
761110/ 44614          1.980+2     1.265+3     3.410+2     1.841+3
761110/ 44622          2.110+2     1.273+3     2.910+2     1.641+3
761110/ 44629          1.980+2     1.373+3     2.810+2     1.709+3
761110/ 44637          1.810+2     1.273+3     3.090+2     1.673+3
761110/ 44644          1.820+2     1.313+3     3.230+2     1.701+3
761110/ 44652          1.850+2     1.253+3     3.110+2     1.701+3
761110/ 44659          2.040+2     1.369+3     3.110+2     1.753+3
```

Table C2.2 — Sample data listing for experiment 2.

The data column headings will change depending on the mode in which the experiment is operating (normal, optional 1, or optional 2). In the optional 1 mode, channels 3 and 4 are eliminated and channels 1 and 2 are sampled twice as fast as in the normal mode. In the optional 2 mode, channel 1 is output in place of channels 2, 3, and 4.

8 DEC 76/18:31:37/

SOLRAD 11B DATA FOR 761110/ 4:45: 7 TO 10/ 4:46:59
EXPERIMENT 3: MAGNESIUM XT, XTI MONITOR

FORMAT: 1 PAGE: 2

DATE/TIME	CONT	MGXI	MGXII	STP	MG11FL	MG12FL	XII/XI	11F/12FL
761110/ 445 7	80	141	149	16	6.51+1	7.36+1	1.13+0	9.53-1
761110/ 446 7	117	146	153	16	3.09+1	3.84+1	1.24+0	2.87-1

Table C2.3 - Sample data listing for experiment 3. Columns 1-3 of the data are in counts. Column 4 is the number of star pulses/min and columns 5-6 are photon flux in units of photons $cm^{-2}sec^{-1}$.

```
8 DEC 76/16:32:20

        SOLRAD 11B DATA FOR 761110/ 4:45: 7 TO 10/ 4:46:59
            EXPERIMENTS 4,5,6,12,13:  X-RAY PHOTOMETERS

FORMAT:  1      PAGE:   2
```

EXP#		12		4		5		13		6	
TIME	CAL	0.5-3A	A RM	1-8A	A A BRM	8-16A	A A BRM	2-10A	A RM	44-60A	A RM
10/ 445 7		1.27+2	1A	1.00+0	B1A			1.49+2	1A	4.90+1	2A
10/ 44514		1.92+2	1A	3.00+0	B1A	2.20+1	B2A				
10/ 44529		1.33+2	1A	9.00+0	B1A			1.50+2	1A		
10/ 44529		1.08+2	1A	1.00+0	B1A	2.20+1	B2A				
10/ 44537		1.93+2	1A	1.00+0	B1A			1.51+2	1A	4.90+1	2A
10/ 44544		1.76+2	1A	1.00+0	B1A	2.20+1	B2A				
10/ 44552		1.92+2	1A	3.00+0	B1A			1.58+2	1A		
10/ 44559		1.40+2	1A	1.00+0	B1A	2.20+1	B2A				
10/ 446 7		1.35+2	1A	1.00+0	B1A			1.51+2	1A	4.90+1	2A
10/ 44614		1.56+2	1A	1.00+0	B1A	2.20+1	B2A				
10/ 44629		1.25+2	1A	1.00+0	B1A			1.52+2	1A		
10/ 44629		1.31+2	1A	1.00+0	B1A	2.20+1	B2A				
10/ 44637		2.15+2	1A	1.00+0	B1A			1.53+2	1A	4.90+1	2A
10/ 44644		2.07+2	1A	1.00+0	B1A	2.20+1	B2A				
10/ 44652		1.43+2	1A	1.00+1	B1A			1.53+2	1A		
10/ 44659		1.43+2	1A	1.00+0	B1A	2.20+1	B2A				

Table C2.4 — Sample data listing for experiments 4, 5, 6, 12, and 13.

The experiment number and associated wavelength range in angstroms are indicated in the column headings. The calibration is indicated by "on" or a blank (off). The selected detector for the experiments which have two detectors appear after the data in the column marked "$\frac{A}{B}$". The detector range is indicated under "R" and the automatic (A) or manual (M) indication is contained in the columns marked "$\frac{A}{M}$".

6 DEC 76/18:53: 2

SOLRAD 11B DATA REPORT FOR 761110/ 4:45: 7 TO 10/ 4:46:59
EXPERIMENTS 7,8: UV ION CHAMBERS

FORMAT: 1 PAGE: 2

EXP #		7A	A	7B	A	7C	A	8	A A
DATE/TIME	CAL	170-500	RM	450-850	RM	725-1050	RM	1080-1350	RRM
761110/ 445 7		1.512+3	3A	3.980+3	2A	2.456+3	2A	1.300+1	B1A
761110/ 44514		1.520+3	3A	3.974+3	2A	2.460+3	2A		
761110/ 44522		1.520+3	3A	3.960+3	2A	2.465+3	2A	1.300+1	B1A
761110/ 44529		1.508+3	3A	3.950+3	2A	2.469+3	2A		
761110/ 44537		1.500+3	3A	3.937+3	2A	2.468+3	2A	1.300+1	B1A
761110/ 44544		1.496+3	3A	3.932+3	2A	2.472+3	2A		
761110/ 44552		1.500+3	3A	3.929+3	2A	2.475+3	2A	1.300+1	B1A
761110/ 44559		1.496+3	3A	3.928+3	2A	2.476+3	2A		
761110/ 446 7		1.490+3	3A	3.931+3	2A	2.476+3	2A	1.300+1	B1A
761110/ 44614		1.481+3	3A	3.934+3	2A	2.475+3	2A		
761110/ 44622		1.480+3	3A	3.939+3	2A	2.474+3	2A	1.300+1	B1A
761110/ 44629		1.484+3	3A	3.949+3	2A	2.469+3	2A		
761110/ 44637		1.490+3	3A	3.956+3	2A	2.464+3	2A	1.300+1	B1A
761110/ 44644		1.492+3	3A	3.966+3	2A	2.459+3	2A		
761110/ 44652		1.488+3	3A	3.973+3	2A	2.455+3	2A	1.300+1	B1A
761110/ 44659		1.468+3	3A	3.976+3	2A	2.448+3	2A		

Table C2.5 — Sample data listing for experiments 7 and 8.

The experiment number is indicated as the first horizontal row. Beneath that is the wavelength range in angstroms for the designated experiment. Immediately to the right of the data are the detector range (column marked R) and the automatic (A)/manual (M) mode indicators. Experiment #8 contains two detectors (A and B) and the selected detector is indicated to the left of the range. The calibration is either "on" or blank (off).

17 DEC 78/16:41:18

SOLRAD 11A DATA REPORT FOR 7812 9/ 1:32: 4 TO 9/ 1:46: 4
EXPERIMENT 9: UV SPECTROMETER

FORMAT: 2 PAGE: 26

FAST SCAN

STEP	WAVELENGTHS	COUNTS/SEC	FLUX	STEP	WAVELENGTHS	COUNTS/SEC	FLUX
2	1200-1225	5.120+ 1		14	1500-1525	5.760+ 1	
3	1225-1250	5.120+ 1		15	1525-1550	5.333+ 1	
4	1250-1275	5.973+ 1		16	1550-1575	5.973+ 1	
5	1275-1300	5.547+ 1		17	1575-1600	5.120+ 1	
6	1300-1325	5.120+ 1		18	1600-1625	5.627+ 1	
7	1325-1350	5.120+ 1		19	1625-1650	5.627+ 1	
8	1350-1375	5.120+ 1		20	1650-1675	5.333+ 1	
9	1375-1400	5.120+ 1		21	1675-1700	5.333+ 1	
10	1400-1425	5.120+ 1		22	1700-1725	5.333+ 1	
11	1425-1450	5.120+ 1		23	1725-1750	5.120+ 1	
12	1450-1475	5.760+ 1		24	1750-1775	5.120+ 1	
13	1475-1500	5.760+ 1		25	1775-1800	5.120+ 1	

FLY-BACK DATA: 5.120+ 1 5.120+ 1
DARK COUNTS: 5.120+ 1 5.120+ 1 5.120+ 1
STEPPING MOTOR PULSE COUNT: 4
EXP 8 FLUX FOR SOLRAD 11A IS 2.550+ 2 ON 9 AT 1:32: 8

Table C2.6 - Sample data listing for experiment 9. (Fast Scan)

This experiment yields valid data only when the motor is in the HIGH torque mode. If the control word is not found in seven pages, data is output for the seventh page back from the time requested by the operator and the output is treated as though the experiment is in the fast scan mode. If the control word is found and the slow scan mode is detected, 1 complete output takes seven telemetry pages. Experiment 8 flux is obtained at a time corresponding to that of the 1200 Å data in experiment #9. This is to provide a comparison between the two detectors.

28 DEC 76/19:53:15

SOLRAD 11B DATA REPORT FOR 76122Ø/22:26:48 TO 2Ø/22:42:46
EXPERIMENT 9: UV SPECTROMETER

FORMAT: 1 PAGE: 24

SLOW SCAN

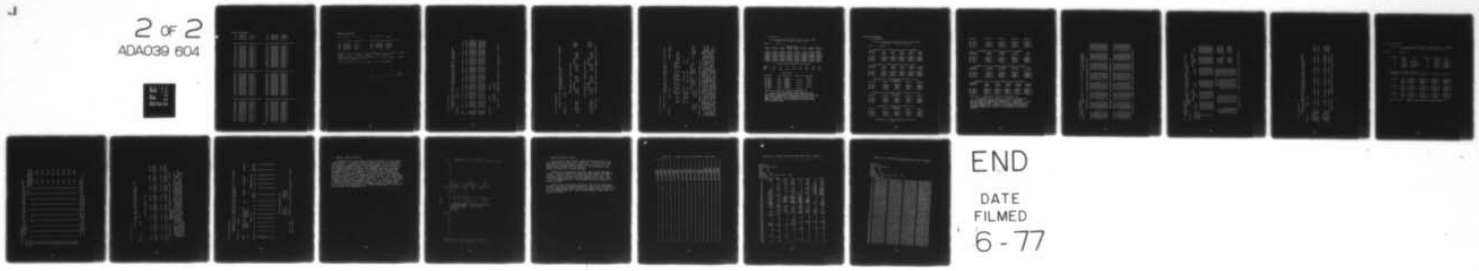
STEP	WAVELENGTHS	COUNTS/SEC	FLUX	STEP	WAVELENGTHS	COUNTS/SEC	FLUX
2	1178-1181	6.Ø13+ 1		17	1225-1228	1.771+ 2	
3	1181-1184	Ø.ØØØ+ Ø		18	1228-1231	1.685+ 2	
4	1184-1187	Ø.ØØØ+ Ø		19	1231-1234	2.219+ 2	
5	1187-119Ø	Ø.ØØØ+ Ø		2Ø	1234-1237	2.799+ 2	
6	119Ø-1193	5.76Ø+ 1		21	1237-124Ø	2.Ø69+ 2	
7	1193-1196	4.9Ø7+ 1		22	124Ø-1243	2.795+ 2	
8	1196-12ØØ	7.68Ø+ 1		23	1243-1246	1.525+ 3	
9	12ØØ-12Ø3	6.187+ 1		24	1246-125Ø	4.6Ø8+ 2	
1Ø	12Ø3-12Ø6	3.221+ 2		25	125Ø-1253	2.246+ 3	
11	12Ø6-12Ø9	2.197+ 2		26	1253-1256	8.547+ 4	
12	12Ø9-1212	7.467+ 1		27	1256-1259	1.312+ 3	
13	1212-1215	6.533+ 1		28	1259-1262	4.267+ 2	
14	1215-1218	6.533+ 1		29	1262-1265	3.499+ 2	
15	1218-1221	9.6ØØ+ 1		3Ø	1265-1268	2.731+ 2	
16	1221-1225	1.3Ø1+ 2		31	1268-1271	2.389+ 2	

STEP	WAVELENGTHS	COUNTS/SEC	FLUX	STEP	WAVELENGTHS	COUNTS/SEC	FLUX
32	1271-1275	2.Ø69+ 2		48	1321-1325	2.539+ 2	
33	1275-1278	2.197+ 2		49	1325-1328	1.579+ 2	
34	1278-1281	4.3Ø9+ 2		5Ø	1328-1331	2.859+ 2	
35	1281-1284	2.155+ 2		51	1331-1334	2.517+ 2	
36	1284-1287	Ø.ØØØ+ Ø		52	1334-1337	2.197+ 2	
37	1287-129Ø	Ø.ØØØ+ Ø		53	1337-134Ø	3.285+ 2	
38	129Ø-1293	Ø.ØØØ+ Ø		54	134Ø-1343	3.648+ 2	
39	1293-1296	2.389+ 2		55	1343-1346	2.758+ 3	
4Ø	1296-13ØØ	2.389+ 2		56	1346-135Ø	4.354+ 3	
41	13ØØ-13Ø3	4.459+ 2		57	135Ø-1353	1.542+ 3	
42	13Ø3-13Ø6	3.264+ 2		58	1353-1356	7.232+ 2	
43	13Ø6-13Ø9	5.824+ 2		59	1356-1359	3.797+ 2	
44	13Ø9-1312	1.664+ 2		6Ø	1359-1362	4.928+ 2	
45	1312-1315	1.635+ 2		61	1362-1365	4.992+ 2	
46	1315-1318	2.987+ 2		62	1365-1368	3.844+ 2	
47	1318-1321	3.Ø51+ 2		63	1368-1371	3.712+ 2	

STEP	WAVELENGTHS	COUNTS/SEC	FLUX	STEP	WAVELENGTHS	COUNTS/SEC	FLUX
64	1371-1375	6.421+ 2		8Ø	1421-1425	Ø.ØØØ+ Ø	
65	1375-1378	4.267+ 2		81	1425-1428	Ø.ØØØ+ Ø	
66	1378-1381	1.29Ø+ 4		82	1428-1431	Ø.ØØØ+ Ø	
67	1381-1384	8.Ø85+ 2		83	1431-1434	Ø.ØØØ+ Ø	
68	1384-1387	4.416+ 2		84	1434-1437	8.Ø43+ 2	
69	1387-139Ø	6.72Ø+ 2		85	1437-144Ø	2.586+ 3	
7Ø	139Ø-1393	7.787+ 2		86	144Ø-1443	2.34Ø+ 3	
71	1393-1396	Ø.ØØØ+ Ø		87	1443-1446	1.184+ 3	
72	1396-14ØØ	Ø.ØØØ+ Ø		88	1446-145Ø	3.125+ 3	
73	14Ø0-14Ø3	Ø.ØØØ+ Ø		89	145Ø-1453	1.276+ 3	
74	14Ø3-14Ø6	Ø.ØØØ+ Ø		9Ø	1453-1456	1.25Ø+ 3	
75	14Ø6-14Ø9	Ø.ØØØ+ Ø		91	1456-1459	1.184+ 3	

AD-A039 604 NAVAL RESEARCH LAB WASHINGTON D C F/G 9/2
SOLRAD-11 ON-LINE SYSTEM (SOLOLS), APPLICATIONS SOFTWARE...INTE--ETC(U)
MAR 77 L S WAGNER, D R UFFELMAN
UNCLASSIFIED NRL-MR-3466 NL

2 OF 2
ADA039 604



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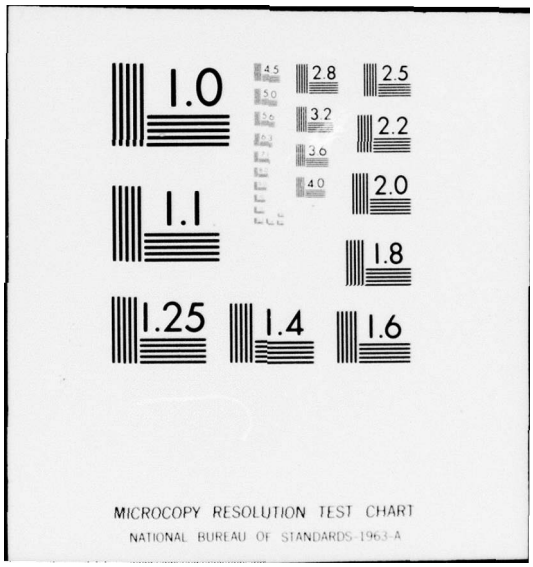
DATE FILMED
6-77


1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
4.5
5.0
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

Slow Scan (Continued)

76	1409-1412	0.000+ 0	92	1459-1462	1.103+ 3
77	1412-1415	0.000+ 0	93	1462-1465	1.069+ 3
78	1415-1418	0.000+ 0	94	1465-1468	1.039+ 3
79	1418-1421	0.000+ 0	95	1468-1471	1.423+ 3

STEP	WAVELENGTHS	COUNTS/SEC	FLUX	STEP	WAVELENGTHS	COUNTS/SEC	FLUX
96	1471-1475	1.137+ 3		112	1521-1525	1.751+ 3	
97	1475-1478	1.235+ 3		113	1525-1528	2.298+ 3	
98	1478-1481	1.513+ 3		114	1528-1531	2.067+ 3	
99	1481-1484	1.359+ 3		115	1531-1534	1.777+ 3	
100	1484-1487	1.239+ 3		116	1534-1537	1.948+ 3	
101	1487-1490	1.372+ 3		117	1537-1540	1.854+ 3	
102	1490-1493	1.355+ 3		118	1540-1543	2.033+ 3	
103	1493-1496	1.303+ 3		119	1543-1546	2.084+ 3	
104	1496-1500	1.367+ 3		120	1546-1550	2.025+ 3	
105	1500-1503	1.466+ 3		121	1550-1553	2.110+ 3	
106	1503-1506	1.487+ 3		122	1553-1556	2.221+ 3	
107	1506-1509	1.589+ 3		123	1556-1559	2.070+ 3	
108	1509-1512	1.611+ 3		124	1559-1562	2.118+ 3	
109	1512-1515	2.033+ 3		125	1562-1565	2.204+ 3	
110	1515-1518	2.039+ 3		126	1565-1568	3.194+ 3	
111	1518-1521	2.127+ 3		127	1568-1571	2.296+ 3	

STEP	WAVELENGTHS	COUNTS/SEC	FLUX	STEP	WAVELENGTHS	COUNTS/SEC	FLUX
128	1571-1575	3.134+ 3		144	1621-1625	2.827+ 3	
129	1575-1578	2.047+ 3		145	1625-1628	2.878+ 3	
130	1578-1581	2.485+ 3		146	1628-1631	2.656+ 3	
131	1581-1584	2.878+ 3		147	1631-1634	2.750+ 3	
132	1584-1587	2.460+ 3		148	1634-1637	4.821+ 2	
133	1587-1590	7.426+ 3		149	1637-1640	2.827+ 3	
134	1590-1593	2.699+ 3		150	1640-1643	2.579+ 3	
135	1593-1596	0.000+ 0		151	1643-1646	3.074+ 3	
136	1596-1600	0.000+ 0		152	1646-1650	3.381+ 3	
137	1600-1603	0.000+ 0		153	1650-1653	2.758+ 3	
138	1603-1606	0.000+ 0		154	1653-1656	3.108+ 3	
139	1606-1609	2.903+ 3		155	1656-1659	3.415+ 3	
140	1609-1612	3.446+ 3		156	1659-1662	3.637+ 3	
141	1612-1615	3.384+ 3		157	1662-1665	3.424+ 3	
142	1615-1618	2.466+ 3		158	1665-1668	3.842+ 3	
143	1618-1621	2.562+ 3		159	1668-1671	3.697+ 3	

STEP	WAVELENGTHS	COUNTS/SEC	FLUX	STEP	WAVELENGTHS	COUNTS/SEC	FLUX
160	1671-1675	4.764+ 3		176	1721-1725	6.419+ 3	
161	1675-1678	4.013+ 3		177	1725-1728	7.136+ 3	
162	1678-1681	3.765+ 3		178	1728-1731	6.965+ 3	
163	1681-1684	4.269+ 3		179	1731-1734	0.000+ 0	
164	1684-1687	0.000+ 0		180	1734-1737	0.000+ 0	
165	1687-1690	0.000+ 0		181	1737-1740	0.000+ 0	
166	1690-1693	0.000+ 0		182	1740-1743	0.000+ 0	
167	1693-1696	0.000+ 0		183	1743-1746	0.000+ 0	
168	1696-1700	0.000+ 0		184	1746-1750	0.000+ 0	
169	1700-1703	5.313+ 3		185	1750-1753	0.000+ 0	
170	1703-1706	4.849+ 3		186	1753-1756	0.000+ 0	
171	1706-1709	4.734+ 3		187	1756-1759	0.000+ 0	
172	1709-1712	4.969+ 3		188	1759-1762	0.000+ 0	
173	1712-1715	4.595+ 3		189	1762-1765	0.000+ 0	
174	1715-1718	5.090+ 3		190	1765-1768	0.000+ 0	

Slow Scan (Continued)

```
175   1718-1721   0.261+ 3                191   1768-1771   0.000+ 0

STEP WAVELENGTHS COUNTS/SEC  FLUX       STEP WAVELENGTHS COUNTS/SEC  FLUX

192   1771-1775   0.000+ 0                197   1787-1790   0.000+ 0
193   1775-1778   0.000+ 0                198   1790-1793   0.000+ 0
194   1778-1781   0.000+ 0                199   1793-1796   0.000+ 0
195   1781-1784   0.000+ 0                200   1796-1800   0.000+ 0
196   1784-1787   0.000+ 0

FLY-BACK DATA:   0.000+ 0   0.000+ 0   0.000+ 0   0.000+ 0   0.000+ 0   0.000+
0.000+ 0   0.000+ 0   0.000+ 0   0.000+ 0   7.853+ 3   6.846+ 3
7.443+ 3   6.322+ 3   6.948+ 3   7.034+ 3
DARK COUNTS:   6.621+ 3   6.514+ 3   6.805+ 3   6.112+ 3   6.129+ 3   6.453+ 3
STEPPING MOTOR PULSE COUNT:   940

EXP 6 FLUX FOR SOLRAD 11B  IS   0.000+ 0   ON  20  AT  22:40:46
```

14 DEC 76/16:43:25

SOLRAD 11B DATA REPORT FOR 76 10 7/ 9:59:29 TO 7/10/ 1:21
EXPERIMENTS 10,11: THOMPSON/BRAGG X-RAY POLARIMETERS

FORMAT: 1 PAGE: 12

DATA	SECT 1	SECT 2	SECT 3	SECT 4	SECT 5	SECT 6	SECT 7	SECT 8
11	5.400+1	3.700+1	5.600+1	9.900+1	4.200+1	7.800+1	0.000+0	1.250+2
10A1	1.300+1	2.000+0	3.900+1	2.000+1	6.000+0	4.000+0	7.000+0	7.000+0
10A2	1.400+1	4.000+0	4.300+1	2.500+1	3.000+0	5.000+0	5.000+0	5.000+0
10B1	2.700+1	8.000+0	1.100+2	5.500+1	1.000+1	9.000+0	1.900+1	1.300+1
10B2	0.000+0	0.000+0	0.000+0	0.000+0	0.000+0	0.000+0	0.000+0	0.000+0
10A1	4.000+0	5.000+0	6.000+0	7.000+0	1.000+0	4.000+0	3.000+0	3.000+0
10A2	4.000+0	2.000+0	2.000+0	1.000+0	3.000+0	4.000+0	8.000+0	8.000+0
10B1	1.900+1	1.100+1	1.700+1	5.900+0	1.000+1	1.700+1	1.400+1	1.600+1
10B2	0.000+0	0.000+0	0.000+0	0.000+0	0.000+0	0.000+0	0.000+0	0.000+0

DETECTOR	COINC	BKGND
A	2.000+0	0.000+0
B	4.000+0	0.000+0

Table C2.7 - Sample Data listing for experiments 10 and 11.

6 DEC 76/16:34:22

SOLRAD 11B DATA REPORT FOR 761110/ 4:45: 7 TO 10/ 4:46:59
EXPERIMENTS 14 & 23

FORMAT: 1 PAGE: 2

EXPERIMENT 14: SOLAR PROTONS

	PROTONS		ALPHAS		HEAVY
DATE/TIME	2 MEV	10 MEV	4.5 MEV	7.5 MEV	NUCLEI
761110/ 445 7	1.100+1	7.600+1	0.000+0	0.000+0	0

EXPERIMENT 23: ANTI-SOLAR PROTONS

	PROTONS		ALPHAS		HEAVY
DATE/TIME	2 MEV	10 MEV	4.5 MEV	7.5 MEV	NUCLEI
761110/ 445 7	0.000+0	8.300+1	0.000+0	0.000+0	0

Table C2.8 - Sample data listing for experiments 14 and 23.

```
29 DEC 76/19: 7:30

     SOLRAD 11B DATA REPORT FOR 76 92//20: 1:20 TO 27//20: 3:12
                    EXPERIMENT 15:  SOLAR WIND

FORMAT:  1      PAGE:  25                                NORMAL SAMPLE   1


                    POSITIVE ION CHANNELS  (OCTAL)
          377 377 377 377 377 315 160 100  74 122 142 241
          270 177 263 300 355 377 377 377 377 377 376 372


          ELECTRON CHANNELS     COLLECTORS        SUM
               (OCTAL)
           100 175 220 247     106 145 151        142

                    DERIVED PLASMA PARAMETERS
     SPEED          TEMP      DENSITY     THETA    PHI     ALPHA/PROTON
   (KM/SEC)       (DEG K)     (N/CC)      (DEG)              RATIO
     7691.        -7.371+9        6.7
```

Table C2.9 - Sample data listing for experiment 15.

The data are output in octal counts. In the flux mode, the data channels are partitioned differently with seven electron flux samples, seven ion flux samples and six samples each from the three 120° sectors of the collector plate. The fast sampling mode produces ten outputs per telemetry page and the sample number will increment appropriately. The derived plasma parameters require algebtaic contants that have not yet been defined for theta, phi and the alpha/proton ration.

A DEC 76/18:37:14

SOLRAD 11B DATA REPORT FOR 76111W/ 4:31: 7 TO 12/ 4:46:59
EXPERIMENT 16: STELLAR AND AURORAL X-RAYS

FORMAT: 1 PAGE: 2

STELLAR DATA

SECTORS 1-8	SECTORS 9-16	SECTORS 17-24	SECTORS 25-32	SECTORS 33-40	SECTORS 41-48	SECTORS 49-56	SECTORS 57-64
2.700+2	3.070+2	3.030+2	3.200+2	3.370+2	4.470+2	3.270+2	3.220+2
2.800+2	3.100+2	3.170+2	2.770+2	2.680+2	4.690+2	3.760+2	3.140+2
2.850+2	2.970+2	3.300+2	2.800+2	4.130+2	3.930+2	3.100+2	3.040+2
3.090+2	2.710+2	2.970+2	3.020+2	3.690+2	3.550+2	2.980+2	2.870+2
2.990+2	3.050+2	2.790+2	2.910+2	3.340+2	3.250+2	3.180+2	2.980+2
2.980+2	2.940+2	2.960+2	2.970+2	3.200+2	3.550+2	3.110+2	3.240+2
2.970+2	2.860+2	2.860+2	3.000+2	3.070+2	3.960+2	3.060+2	3.330+2
3.080+2	2.950+2	2.720+2	3.030+2	2.880+2	3.820+2	2.990+2	2.740+2

STELLAR SAMPLING TIME(SST) FOR EACH SLEW

PAGE #	2	1	0	31	30	29	28	27
SLEW	2	1	0	7	6	5	4	3
SST	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58

AURORAL DATA

DATE/TIME	AST	AURORAL CPS	BKGND CPS	COINC CPS
12/ 445 7	3.16	6.940+2		3.998+4
12/ 443 7	3.16	6.770+2	4.199+4	
12/ 441 7	3.16	7.340+2		3.959+4
12/ 439 7	3.16	6.690+2	4.237+4	
12/ 437 7	3.16	7.160+2		3.985+4
12/ 435 7	3.16	6.690+2	4.211+4	
12/ 433 7	3.16	6.930+2		3.991+4
12/ 431 7	3.16	7.260+2	4.186+4	

Table C2.10 - Sample data listing for experiment 16.

In this output, the operator has the option to output stellar data, auroral data or both. This example shows both. The first row of stellar data corresponds to the first page number, slew and SST indicated under "Stellar Sampling Time for each Slew". The second row of data corresponds to the second page number indicated and so on. One complete data record is made up of 8 telemetry pages.

Table C2.10 (Continued)

```
8 DEC 76/18:34:55

      SOLRAD 11B DATA REPORT FOR 761110/ 4:39: 7 TO 10/ 4:46:59
              EXPERIMENT 17:  OMNIDIRECTIONAL PROTONS

FORMAT:  1     PAGE:   2


      EXPERIMENT 17A:  PROTON PARTICLES (COUNTS VS. ENERGY)
 CHANNEL              P1          P2          P3          P4          P5
DATE/TIME          5-26        10-40       20-48       40-80       80-116
                   (MEV)       (MEV)       (MEV)       (MEV)       (MEV)

10/ 445 7       0.000+ 0    3.000+ 0    6.000+ 0    6.000+ 0    7.000+ 0
10/ 443 7       0.000+ 0    2.000+ 0    6.000+ 0    2.000+ 0    1.100+ 1
10/ 441 7       0.000+ 0    4.000+ 0    5.000+ 0    3.000+ 0    3.000+ 0
10/ 439 7       1.000+ 0    4.000+ 0    4.000+ 0    5.000+ 0    3.000+ 0


      EXPERIMENT 17A:  ALPHA PARTICLES (COUNTS VS. ENERGY)
 CHANNEL              A1          A2          A3          A4          A5
DATE/TIME          25-68       50-100      88-150      168-244     320-385
                   (MEV)       (MEV)       (MEV)       (MEV)       (MEV)

10/ 445 7       0.000+ 0    0.000+ 0    0.000+ 0    1.000+ 0    0.000+ 0
10/ 443 7       0.000+ 0    0.000+ 0    0.000+ 0    0.000+ 0    3.000+ 0
10/ 441 7       0.000+ 0    0.000+ 0    1.000+ 0    0.000+ 0    0.000+ 0
10/ 439 7       0.000+ 0    3.000+ 0    0.000+ 0    0.000+ 0    0.000+ 0


      EXPERIMENT 17C:  ALPHA PARTICLES WITH ENERGY > 0.5 MEV
                            CHANNEL A12
DATE/TIME          SECTOR 1        SECTOR 2        SECTOR 3        SECTOR 4

10/ 445 7       1.700+ 1        7.000+ 0        1.600+ 1        1.400+ 1
10/ 443 7       1.600+ 1        1.600+ 1        9.000+ 0        9.000+ 0
10/ 441 7       8.000+ 0        1.700+ 1        1.600+ 1        1.500+ 1
10/ 439 7       1.700+ 1        1.700+ 1        1.400+ 1        9.000+ 0


   EXPERIMENT 17C:  HEAVY NUCLEI (10>Z>6) WITH ENERGY > 0.6 MEV
                            CHANNEL H6
DATE/TIME          SECTOR 1        SECTOR 2        SECTOR 3        SECTOR 4

10/ 445 7       1.700+ 1        1.500+ 1        1.500+ 1        1.400+ 1
10/ 443 7       8.000+ 0        1.700+ 1        1.600+ 1        1.600+ 1
10/ 441 7       8.000+ 0        2.200+ 1        9.000+ 0        1.500+ 1
10/ 439 7       2.200+ 1        9.000+ 0        1.600+ 1        1.500+ 1


         EXPERIMENT 17D:  PROTONS WITH ENERGY > 1.0 MEV
                            CHANNEL P11
DATE/TIME          SECTOR 1        SECTOR 2        SECTOR 3        SECTOR 4

10/ 445 7       0.000+ 0        0.000+ 0        0.000+ 0        0.000+ 0
10/ 443 7       0.000+ 0        0.000+ 0        0.000+ 0        1.000+ 0
10/ 441 7       1.000+ 0        0.000+ 0        1.000+ 0        0.000+ 0
10/ 439 7       0.000+ 0        0.000+ 0        1.000+ 0        0.000+ 0


         EXPERIMENT 17D:  PROTONS WITH ENERGY OF 36-74 KEV
                            CHANNEL P2
```

DATE/TIME	SECTOR 1	SECTOR 2	SECTOR 3	SECTOR 4
10/ 445 7	2.350+ 2	3.650+ 2	3.970+ 2	2.470+ 2
10/ 443 7	2.210+ 2	2.530+ 2	2.440+ 2	2.330+ 2
10/ 441 7	1.930+ 2	2.100+ 2	1.910+ 2	1.700+ 2
10/ 439 7	1.950+ 2	3.010+ 2	3.390+ 2	3.330+ 2

EXPERIMENT 17C: HEAVY NUCLEI (COUNTS VS. ENERGY)

CHANNEL	S(A12)	S(H6)	(H7)	(H8)
DATE/TIME	ALPHAS	10>Z>6	18>Z>12	Z>18
10/ 445 7	5.400+ 1	6.100+ 1	6.000+ 0	3.500+ 1
10/ 443 7	5.000+ 1	5.700+ 1	3.000+ 0	4.000+ 1
10/ 441 7	5.600+ 1	5.400+ 1	9.000+ 0	3.800+ 1
10/ 439 7	5.700+ 1	6.200+ 1	7.000+ 0	3.900+ 1

EXPERIMENT 17D: HIGH ENERGY PROTONS (COUNTS VS. ENERGY)

CHANNEL	(P14)	(P10)	S(P11)	(P12)
DATE/TIME	>0.5 MEV	>0.5 MEV	>1.0 MEV	>1.5 MEV
10/ 445 7	1.810+ 2	1.000+ 0	0.000+ 0	0.000+ 0
10/ 443 7	2.010+ 2	2.000+ 0	1.000+ 0	1.000+ 0
10/ 441 7	2.010+ 2	3.000+ 0	2.000+ 0	2.000+ 0
10/ 439 7	2.000+ 2	5.000+ 0	1.000+ 0	2.000+ 0

EXPERIMENT 17D: LOW ENERGY PROTONS (COUNTS VS. ENERGY)

CHANNEL	L1	L2	L3	L4	L5
DATE/TIME	20-36 (KEV)	36-74 (KEV)	74-150 (KEV)	150-280 (KEV)	280-500 (KEV)
10/ 445 7	6.257+ 3	1.242+ 3	2.250+ 2	1.700+ 1	6.000+ 0
10/ 443 7	4.977+ 3	9.510+ 2	1.590+ 2	8.000+ 0	0.000+ 0
10/ 441 7	4.225+ 3	7.640+ 2	1.370+ 2	1.000+ 1	0.000+ 0
10/ 439 7	4.901+ 3	1.168+ 3	1.710+ 2	3.000+ 1	8.000+ 0

Table C2.11 - Sample data listing for experiment 17.

The operator has the option to select any combination of the five different outputs for experiment 17. These are alpha particles, sectored data, heavy nuclei, high energy protons and low energy protons. Usually, all five are selected as in the above example. The operator may also select the number of telemetry pages/record, up to 16. This example has four pages/record.

14 DEC 76/16:24:52
SOLRAD 11B DATA REPORT FOR 76 831/19:21:45 TO 31/19:23:37
FORMAT: 2 PAGE: 0 FILTER POSITION -

EXPERIMENT 18: GEOCORONAL-EXTRATERRESTRIAL EUV

SECTORS 1-8	SECTORS 9-16	SECTORS 17-24	SECTORS 25-32	SECTORS 33-40	SECTORS 41-48	SECTORS 49-56	SECTORS 57-64
2.530+2	2.460+2	7.590+2	5.150+2	3.550+2	6.110+2	5.000+0	5.030+2
2.570+2	1.060+2	4.710+2	1.400+1	5.370+2	5.270+2	1.740+2	5.030+2
4.090+2	7.300+1	3.230+2	4.450+2	6.570+2	1.005+3	1.060+2	3.710+2
4.000+0	1.810+2	2.030+2	2.500+1	1.110+2	1.500+2	6.810+2	4.030+2
3.110+2	2.050+2	1.053+3	1.550+2	7.070+2	9.650+2	2.510+2	4.250+2
4.890+2	3.830+2	1.230+2	2.440+2	4.000+0	3.600+1	5.490+2	4.810+2
1.370+2	6.310+2	1.050+2	4.600+1	9.090+2	1.620+2	5.870+2	4.990+2
6.250+2	2.520+2	5.150+2	1.270+2	2.460+2	2.450+2	3.000+0	5.950+2

EXPERIMENT 19: GEOCORONAL-EXTRATERRESTRIAL EUV

SECTORS 1-8	SECTORS 9-16	SECTORS 17-24	SECTORS 25-32	SECTORS 33-40	SECTORS 41-48	SECTORS 49-56	SECTORS 57-64
4.090+2	4.710+2	7.690+2	2.300+1	3.870+2	5.190+2	6.010+2	1.180+2
4.630+2	6.110+2	6.030+2	7.190+2	6.270+2	1.610+2	4.430+2	7.700+1
1.250+2	6.910+2	1.520+2	1.000+0	5.050+2	3.350+2	4.050+2	1.250+2
6.510+2	4.730+2	4.650+2	5.090+2	5.830+2	4.910+2	6.330+2	6.070+2
5.200+1	3.050+2	6.430+2	2.300+2	2.140+2	4.890+2	5.330+2	6.800+1
6.450+2	5.910+2	9.000+0	2.650+2	4.410+2	5.850+2	4.010+2	6.390+2
5.690+2	5.490+2	4.150+2	1.610+2	5.750+2	1.930+2	1.260+2	1.510+2
4.390+2	5.730+2	3.490+2	2.170+2	3.000+1	2.730+2	4.190+2	1.650+2

Table C2.12 - Sample data listing for experiments 18 and 19.

```
6 DFL 76/10:38:30
    SOLRAD 11B DATA REPORT FOR 761110/ 4:45: 7 TO 10/ 4:46:59
            EXPERIMENT 20:  PROTON-ALPHA TELESCOPE
FORMAT:  1      PAGE:  2

                        FIRST SAMPLE                          SECOND SAMPLE
DETECTOR    COINC       200          750          COINC       200          750
 PIN #        W           X            Y            W           X            Y
CHANNEL
    0     0.000+0     0.000+0     1.390+2     0.000+0     0.000+0     1.370+2
    1     0.000+0     0.000+0     2.000+0     0.000+0     0.000+0     1.000+0
    2     0.000+0     0.000+0     3.000+0     0.000+0     0.000+0     6.000+0
    3     0.000+0     0.000+0     1.250+2     0.000+0     0.000+0     1.030+2
    4     0.000+0     0.000+0     1.160+2     0.000+0     0.000+0     1.230+2
    5     0.000+0     0.000+0     4.000+0     0.000+0     0.000+0     4.000+0
    6     0.000+0     0.000+0     0.000+0     0.000+0     0.000+0     1.000+0
    7     0.000+0     0.000+0     0.000+0     0.000+0     0.000+0     0.000+0

                                COUNTS VS ENERGY
    MEV         PROTONS          MEV         PROTONS          MEV         ALPHA
  5.5-8       0.000+0     2.69-4.03   0.000+0     22-32       0.000+0
  08-13       0.000+0     2.01-2.60   0.000+0     32-52       0.000+0
  13-25       0.000+0     1.56-2.01   0.000+0     52-100      0.000+0
  25-50       0.000+0     1.35-1.56   0.000+0
  50-100      0.000+0     1.24-1.35   0.000+0
  5.5-8       0.000+0     2.69-4.03   0.000+0     22-32       0.000+0
  08-13       0.000+0     2.01-2.60   0.000+0     32-52       0.000+0
  13-25       0.000+0     1.56-2.01   0.000+0     52-100      0.000+0
  25-50       0.000+0     1.35-1.56   0.000+0
  50-100      0.000+0     1.24-1.35   0.000+0
```

Table C2.13 - Sample data listing for experiment 20.

8 DEC 76/16:57:45

SOLRAD 11B DATA REPORT FOR 76111Ø/ 3:29: 7 TO 1Ø/ 3:3Ø:59
EXPERIMENT 21: LOW ENERGY PROTON SPECTROMETER

FORMAT: 1 PAGE: 28

CHANNEL #	1	2	3	4	5	6
ENERGY(KEV)	97-137	137-169	169-228	228-32Ø	32Ø-445	445-617
DATE/TIME						
76111Ø/ 329 7	3.615+2	4.687+1	2.472+1	1.178+1	3.667+Ø	3.391+Ø

CHANNEL #	7	8	9	1Ø	11	12
ENERGY(KEV)	617-854	854-1277	1277-1774	1774-2744	2744-6Ø2Ø	COINC.
DATE/TIME						COUNTS
76111Ø/ 329 7	1.231+Ø	4.925-1	6.7Ø7-1	Ø.ØØØ+Ø	2.544-2	3.821+1

Table C2.14 - Sample data listing for experiment 21.

```
o DEC 76/16:35:52

      SOLRAD 11B DATA REPORT FOR 76111@/ 4:45: 7 TO 1@/ 4:46:59
                EXPERIMENT 22:  SOLAR FLARE ELECTRONS

FORMAT:  1      PAGE:   2


      CHANNEL  ENERGY      FLUX          CHANNEL  ENERGY      FLUX
         #      (KEV)                      #      (KEV)
         2       46.2   4.305+ 4           9      874.@   6.814- 1
         4      155.7   4.112+ 2          1@     1116.@   3.972+ 1
         5      222.@   1.168- 2          11     1357.@   1.823+ 1
         6      147.@   1.446+ 4          12     16@@.@   6.668- 1


      PROTONS > 7@ MEV:  3.333- 1
      SPECTRAL INDICES: K(2,4) = -3.677+ @    K(4,8) = -3.151+ @


      CHANNEL   KEV   SECTOR 1   SECTOR 2   SECTOR 3   SECTOR 4
         1       7.7  2.274+ 7   2.267+ 7   2.267+ 7   2.267+ 7
         7     385.@  1.2@5+ @   9.752- 1   9.561- 1   9.943- 1

      CHANNEL   KEV   SAMPLE 1   SAMPLE 2   SAMPLE 3   SAMPLE 4
         3     1@7.6  7.13o+ 4   7.1@8+ 4   7.13o+ 4   7.1@8+ 4
         8     64@.@  5.157- 1   6.798- 1   o.798- 1   6.564- 1

      CHANNEL   KEV   SAMPLE 5   SAMPLE o   SAMPLE 7   SAMPLE 8
         3     1@7.6  7.1@8+ 4   7.1@8+ 4   7.1@8+ 4   7.1@8+ 4
         8     64@.@  7.736- 1   8.9@8- 1   7.97@- 1   6.@95- 1
```

Table C2.15 - Sample data listing for experiment 22.

8 DEC 76/16:40:46

SOLRAD 11B DATA REPORT FOR 761110/ 4:41: 7 TO 10/ 4:42:59

EXPERIMENT 24: BACKGROUND X-RAY SPECTROMETER

FORMAT: 1 PAGE: 7

CHANNEL NO.	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	NORMAL DATA FROM MEMORY 1 RATEMETER (VOLTS)	TEMP 2 (DEG K)
0	0	0	0	0	0	0	0	0	0	0		
10	0	0	0	0	0	0	0	0	0	0		
20	0	0	0	0	0	0	0	0	0	0	1.42	-83.31
30	0	0	0	0	0	0	0	0	0	0		
40	0	0	0	0	0	0	0	0	0	0		
50	0	0	0	0	0	0	0	0	0	0	2.00	-83.31
60	0	0	0	0	0	0	0	0	0	0		
70	0	0	0	0	0	0	0	0	0	0		
80	0	0	0	0	0	0	0	0	0	0	2.00	-83.31
90	0	0	0	0	0	0	0	0	0	0		
100	0	0	0	0	0	0	0	0	0	0		
110	0	0	0	0	0	0	0	0	0	0	2.12	-83.31
120	0	0	0	0	0	0	0	0	0	0		
130	0	0	0	0	0	0	0	0	0	0		
140	0	0	0	0	0	0	0	0	0	0	2.04	-83.31
150	0	0	0	0	0	0	0	0	0	0		
160	0	0	0	0	0	0	0	0	0	0		
170	0	0	0	0	0	0	0	0	0	0	2.12	-83.31
180	0	0	0	0	0	0	0	0	0	0		
190	0	0	0	0	0	0	0	0	0	0		
200	0	0	0	0	0	0	0	0	0	0	2.12	-83.31
210	0	0	0	0	0	0	0	0	0	0		
220	0	0	0	0	0	0	0	0	0	0		
230	0	0	0	0	0	0	0	0	0	0	2.34	-83.31
240	0	0	0	0	0	0	0	0	0	0		
250	0	0	0	0	0	0						

Table C2.16 - Sample data listing for experiment 24
This experiment is not functioning, but the output is included for the sake of completeness.

29 DEC 76/19: 6:.2

SOLRAD 11B DATA REPORT FOR 76 927/20: 1:20
EXPERIMENT 25: GAMMA RAY BURSTS

FORMAT: 1 PAGE: 25

STATE-OF-HEALTH DATA

A:T- 0	A:T- 4	A:T- 8	A:T-12	A:T-16	A:T-20	A:T-24	A:T-28
2.953+3	3.001+3	2.945+3	2.945+3	2.913+3	2.993+3	2.921+3	2.977+3
2.953+3	3.001+3	2.945+3	2.945+3	2.913+3	2.993+3	2.921+3	2.977+3

B:T- 2	B:T- 6	B:T-10	B:T-14	B:T-18	B:T-22	B:T-26	B:T-30
2.937+3	2.921+3	2.897+3	2.897+3	2.793+3	2.945+3	2.945+3	2.977+3
2.937+3	2.921+3	2.897+3	2.897+3	2.793+3	2.945+3	2.945+3	2.977+3

Table C2.17 - Sample data listing for experiment 25 (State of Health).

The state of health data is a status monitor mode for this experiment. The data is in counts and is output once per minute, but is updated only once per telemetry page. There are two detectors which are alternated on successive pages. The display contains 16 pages of data working backwards from the time requested.

14 DEC 76/18:25:32

SOLRAD 11B DATA REPORT FOR 76 331/19:21:45 TO 31/19:25:45
EXPERIMENT 25: GAMMA RAY BURST DETECTOR

FORMAT: 2 PAGE: 1

EVENT	COARSE TIME (OCTAL NUMBERS)	FINE TIME	CAL	SOURCE	RETRIGGER	SEGMENT
48	514257	2233600	3	1	1	9

	RATE DATA									SPECTRAL DATA					
									TOTAL					TOTALS	
GROUP	S1	S2	S3	S4	S5	S6	S7	S8	COUNT	C1	C2	C3	C4	2-3	1-4
1P	2	0	0	2	1	2	0	2	9	4	1	1	3	2	9
2P	3	0	0	1	0	2	1	0	7	5	2	0	0	2	7
3P	1	0	2	1	2	0	0	2	8	2	3	2	1	5	8
4P	0	1	0	0	3	1	0	0	5	1	1	2	1	3	5
5P	0	1	0	2	0	1	0	0	4	1	1	0	2	1	4
1	1	0	1	1	1	0	1	6	11	2	0	2	7	2	11
2	0	0	0	3	2	0	0	0	5	1	1	0	3	1	5
3	0	0	1	1	0	0	0	0	2	2	0	0	0	0	2
4	0	1	0	2	1	0	0	0	4	0	1	1	2	2	4
5	0	1	0	1	0	1	0	1	4	0	1	0	3	1	4

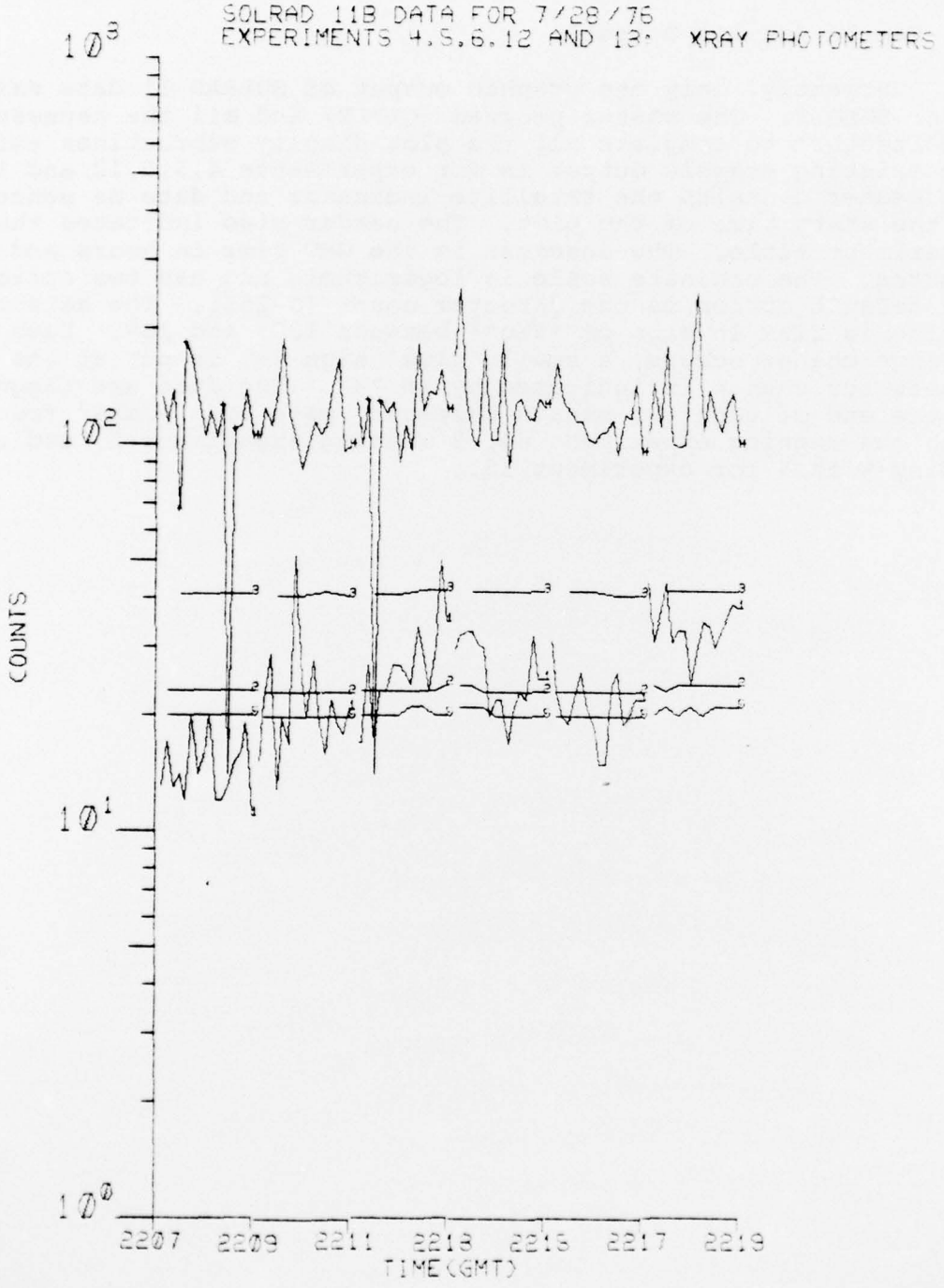
STATE-OF-HEALTH DATA

SA:T+ 0	SB:T+ 2
3.165+3	3.057+3
3.165+3	3.057+3

Table C2.18 - Sample data listing for experiment 25 (Gamma data output).

3. Sample Graphic Outputs

Currently, only one graphic output of SOLRAD 11 data exists under SOLOLS. The master program (QLPLT) and all the necessary architecture to complete all the plot display subroutines exists. The existing graphic output is for experiments 4,5,6,12 and 13. The header contains the satellite indicator and date as sensed at the start time of the plot. The header also indicates the experiment title. The abscissa is the GMT time in hours and minutes. The ordinate scale is logarithmic and has two options. The default option is the detector count (0-255). The selectable option is flux in ergs $cm^{-2}sec^{-1}$ between 10^{-7} and 10^{0}. Each time a range change occurs, a small "plus" sign (+) is put at the point. A detector change is indicated by an "X". The data are tagged at the end of each two minute telemetry page by a number from 1-5 with one meaning experiment #4, 2 meaning experiment 5, and so on ending with 5 for experiment 13.


SOLRAD 11B DATA FOR 7/28/76
EXPERIMENTS 4,5,6,12 AND 13: XRAY PHOTOMETERS
10^3
10^2
10^1
10^0
COUNTS
2207
2209
2211
2213
2215
2217
2219
TIME(GMT)

4. Sample Describe Outputs

The Describe task allows a detailed examination of the data base and its directory. Table C4.1 is a listing of the data base directory showing header data in words 1-124 and minute tags in words 125 and greater. All directory information is printed in integer decimal.

Table C4.2 illustrates the octal form of the data base output. The pure data is preceded by some header information. The data itself is given in octal magnitude and sign. The left hand column contains the word number of the first word in the corresponding row. Word number advances from left to right in a row.

Table C4.3 illustrates the binary form of the data base output. The data is again preceded by some header information. The left hand column contains the word number of the first word in the corresponding row. Word number advances from left to right in a row.

Table C4.1 Sample Data Base Directory (Describe)

Table C4.2 Sample Data Base Describe Output (Octal)

```
SATELLITE A
FORMAT NO.=        1
FIRST FRAME PROCESSED=        3
YEAR=       76
DAY=      355
HOUR=       23
MINUTE=       14
SECONDS=       59
FRACTIONAL SEC IN TENTHS OF MSEC=     7951
PAGE NO.=       15
TTY MESSAGE NO.=       33
    1        12114      54327       7473       17417       20041        417           0       -70611
    9        74612          3      -50400           0           0       5422           0            0
   17            0          0           0        3053           0          0           0         7541
   25            0          0        1174        1174           0       1174         273          760
   33            0        760        3060        3060           0       3060           0         1200
   41            0          0           0           0           0          0        6436         6452
   49            0       6502          75          75           0         75          22            0
   57            0          0         152       40106          -1      22065       37106        35435
   65        21000       -302           0           0           0          0         106        35435
   73        21004          0         267       61405           0        225       31474        35106
   81        34460         72           0           0           0          0          74        35106
   89        34460          0           0       74777       -23000     -50575       26000       -43343
   97          400       -7575           0           0           0          0           0       -76542
  105       -64000          0        -361       -20001        -201         14           0           17
  113         -201         12       66635       -26764      -10043        232           0           16
  121       -10043          0        5647        4475        4523        234           0            0
  129         1000        340      -12426      -12426      -12426      -53000           0          340
  137       -12426        340      -12426      -12426      -12426      -53000           0          340
  145       -12426          0           0        6556        6556        6556        6556         6556
  153         6556       6556           0           0           0          0           0         6556
  161         6550       3777        3777           0        3777          0           0         6270
  169         6271       6272        6273        6274        6275        6271           0            0
  177            0          0           0        6274        6275          0           0            0
  185            0        371       73143           0           0       50113        6065        -7611
  193        72222       -7774      -70072       70173       -7632       -7413         21            0
  201            0          0          74       35103       -42703       71322       37072        40403
  209        32057       -6065           0           0           0          0         377         -300
  217        32703          0           0           0           0          0           0            0
  225            0          0           0           0           0          0           0            0
  233            0          0           0           0           0          0           0            0
  241            0        157           0        1503           0          0           0            0
  249            0          0           0           0           0          0           0            0
  257            0          0           0       -2455       -3404      -23436      -21104       -23054
  265       -21163          0           0           0           0          0           0           13
  273       -54105     -25756        -551       -42000           0          0           0            0
  281            0          0           0           0           0          0           0            0
  289            0          0           0           0           0          0           0            0
  297            0          0           0          26        5422          0         140          156
  305          355       5200           0           0           0          0           0            0
  313            0          0           0           0           0          0           0            0
  321            0          0           0           0           0          0           0            0
  329            0          0           0           0           0          0           0         1376
  337         2137         13        3170           0           0          0           0            0
  345            0      34474           0           0           0          0           0            0
  353            0          0           0           0           0          0           0            0
  361            0          0           0           0         132        671           0            0
  369         2062       5764           0           0           0          1           0            0
  377            0          0           0           0           0          0           0            0
```

Table C4.3 Sample Data Base Describe Output (Binary)

```
SATELLITE A
FORMAT NO.=        1
FIRST FRAME PROCESSED=        3
YEAR=       78
DAY=      355
HOUR=       23
MINUTE=       14
SECONDS=       59
FRACTIONAL SEC IN TENTHS OF MSEC=     7951
PAGE NO.=       15
TTY MESSAGE NO.=       33
```